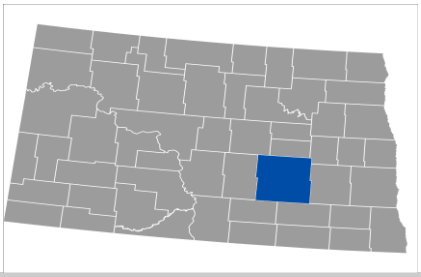
# FLOOD INSURANCE STUDY

## FEDERAL EMERGENCY MANAGEMENT AGENCY

**VOLUME 1 OF 1**



# STUTSMAN COUNTY, NORTH DAKOTA

**AND INCORPORATED AREAS**

| COMMUNITY NAME | CID | COMMUNITY NAME | CID |
|---|---|---|---|
| STUTSMAN COUNTY | 380119 | CITY OF MEDINA | 380124 |
| CITY OF BUCHANAN | 385397 | CITY OF MONTPELIER | 380125 |
| CITY OF CLEVELAND | 380342 | NOGOSEK TOWNSHIP | 380693 |
| CITY OF COURTENAY | 380121 | CITY OF PINGREE | 380126 |
| CORINNE TOWNSHIP | 380687 | CITY OF SPIRITWOOD LAKE | 380315 |
| CITY OF JAMESTOWN | 385366 | CITY OF STREETER | 380127 |
| CITY OF KENSAL | 380123 | CITY OF WOODWORTH | 380349 |

FEMA

**PRELIMINARY**
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Exhibits


| Flood Profiles | Panel |
|---|---|
| James River | 01P-03P |
| Pipestem Creek | 04P |


**Published Separately**

Flood Insurance Rate Map (FIRM)

# FLOOD INSURANCE STUDY REPORT
# STUTSMAN COUNTY, NORTH DAKOTA AND INCORPORATED AREAS

## SECTION 1.0 – INTRODUCTION

### 1.1 The National Flood Insurance Program

The National Flood Insurance Program (NFIP) is a voluntary Federal program that enables property owners in participating communities to purchase insurance protection against losses from flooding. This insurance is designed to provide an insurance alternative to disaster assistance to meet the escalating costs of repairing damage to buildings and their contents caused by floods.

For decades, the national response to flood disasters was generally limited to constructing flood-control works such as dams, levees, sea-walls, and the like, and providing disaster relief to flood victims. This approach did not reduce losses nor did it discourage unwise development. In some instances, it may have actually encouraged additional development. To compound the problem, the public generally could not buy flood coverage from insurance companies, and building techniques to reduce flood damage were often overlooked.

In the face of mounting flood losses and escalating costs of disaster relief to the general taxpayers, the U.S. Congress created the NFIP. The intent was to reduce future flood damage through community floodplain management ordinances, and provide protection for property owners against potential losses through an insurance mechanism that requires a premium to be paid for the protection.

The U.S. Congress established the NFIP on August 1, 1968, with the passage of the National Flood Insurance Act of 1968. The NFIP was broadened and modified with the passage of the Flood Disaster Protection Act of 1973 and other legislative measures. It was further modified by the National Flood Insurance Reform Act of 1994 and the Flood Insurance Reform Act of 2004. The NFIP is administered by the Federal Emergency Management Agency (FEMA), which is a component of the Department of Homeland Security (DHS).

Participation in the NFIP is based on an agreement between local communities and the Federal Government. If a community adopts and enforces floodplain management regulations to reduce future flood risks to new construction and substantially improved structures in Special Flood Hazard Areas (SFHAs), the Federal Government will make flood insurance available within the community as a financial protection against flood losses. The community's floodplain management regulations must meet or exceed criteria established in accordance with Title 44 Code of Federal Regulations (CFR) Part 60.3, *Criteria for land Management and Use*.

SFHAs are delineated on the community's Flood Insurance Rate Maps (FIRMs). Under the NFIP, buildings that were built before the flood hazard was identified on the community's FIRMs are generally referred to as "Pre-FIRM" buildings. When the NFIP was created, the U.S. Congress recognized that insurance for Pre-FIRM buildings would be prohibitively expensive if the premiums were not subsidized by the Federal Government. Congress also recognized that most of these floodprone buildings were built by individuals who did not have sufficient knowledge of the flood hazard to make informed decisions. The NFIP requires that full actuarial rates reflecting the complete flood risk be charged on all buildings constructed or substantially improved on or after the effective date of the initial FIRM for the community or after December 31, 1974, whichever is later. These buildings are generally referred to as "Post-FIRM" buildings.

## 1.2 Purpose of this Flood Insurance Study Report

This Flood Insurance Study (FIS) report revises and updates information on the existence and severity of flood hazards for the study area. The studies described in this report developed flood hazard data that will be used to establish actuarial flood insurance rates and to assist communities in efforts to implement sound floodplain management.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive than the minimum Federal requirements. Contact your State NFIP Coordinator to ensure that any higher State standards are included in the community's regulations.

## 1.3 Jurisdictions Included in the Flood Insurance Study Report

This FIS Report covers the entire geographic area of Stutsman County, North Dakota and Incorporated Areas.

The jurisdictions that are included in this project area, along with the Community Identification Number (CID) for each community and the 8-digit Hydrologic Unit Codes (HUC-8) sub-basins affecting each, are shown in Table 1. The Flood Insurance Rate Map (FIRM) panel numbers that affect each community are listed. If the flood hazard data for the community is not included in this FIS Report, the location of that data is identified.

The location of flood hazard data for participating communities in multiple jurisdictions is also indicated in the table.

Jurisdictions that have no identified SFHAs as of the effective date of this study are indicated in the table. Changed conditions in these communities (such as urbanization or annexation) or the availability of new scientific or technical data about flood hazards could make it necessary to determine SFHAs in these jurisdictions in the future.

**Table 1: Listing of NFIP Jurisdictions**

| Community | CID | HUC-8 Sub-Basin(s) | Located on FIRM Panel(s) | If Not Included, Location of Flood Hazard Data |
|---|---|---|---|---|
| CITY OF BUCHANAN[1] | 385397 | 10160001 | 38093C0600F | |
| CITY OF CLEVELAND[1] | 380342 | 10160003 | 38093C0750E[2], 38093C0775E[2] | |
| CITY OF COURTENAY[1] | 380121 | 09020203 | 38093C0425E[2] | |
| CORINNE TOWNSHIP[1] | 380687 | 09020203 | 38093C0200E[2], 38093C0225E[2], 38093C0425E[2], 38093C0450E[2] | |
| CITY OF JAMESTOWN | 385366 | 10160001, 10160002, 10160003 | 38093C0825F, 38093C0836E, 38093C0837F, 38093C0838E, 38093C0839E, 38093C0843E, 38093C0844E 38093C0845E[2], 38093C0850F, 38093C0875E[2], 38093C1050E[2], 38093C1075E[2], 38093C1100E[2] | |
| CITY OF KENSAL | 380123 | 09020203, 10160001 | 38093C0165E | |
| CITY OF MEDINA[1] | 380124 | 10130103 | 38093C0725E[2] | |
| CITY OF MONTPELIER[1] | 380125 | 10160003 | 38093C1325E[2] | |
| NOGOSEK TOWNSHIP[1] | 380693 | 09020203 | 38093C0165E, 38093C0175E[2], 38093C0200E[2], 38093C0400E[2], 38093C0425E[2] | |
| CITY OF PINGREE[1] | 380126 | 10160001, 10160002 | 38093C0350E[2] | |
| CITY OF SPIRITWOOD LAKE | 380315 | 10160003 | 38093C0630E | |
| CITY OF STREETER[1] | 380127 | 10130103 | 38093C1175E[2] | |

**Table 1: Listing of NFIP Jurisdictions *(continued)***

| Community | CID | HUC-8 Sub-Basin(s) | Located on FIRM Panel(s) | If Not Included, Location of Flood Hazard Data |
|---|---|---|---|---|
| STUTSMAN COUNTY | 38FED | 09020203, 09020204, 10130103, 10160001, 10160002, 10160003 | 38093C0025E[2], 38093C0050E[2], 38093C0075E[2], 38093C0100E[2], 38093C0125E[2], 38093C0150F, 38093C0165E, 38093C0175E[2], 38093C0200E[2], 38093C0225E[2], 38093C0250E[2], 38093C0275E[2], 38093C0300E[2], 38093C0325E[2], 38093C0350E[2], 38093C0375F, 38093C0400E[2], 38093C0425E[2], 38093C0450E[2], 38093C0475E[2], 38093C0500E[2], 38093C0525E[2], 38093C0550E[2], 38093C0575E[2], 38093C0600F, 38093C0625F, 38093C0630E, 38093C0650E[2], 38093C0675E[2], 38093C0700E[2], 38093C0725E[2], 38093C0750E[2], 38093C0775E[2], 38093C0800E[2], 38093C0825F, 38093C0836E, 38093C0837F, 38093C0838E, 38093C0839E, 38093C0843E, 38093C0844E, 38093C0845E[2], 38093C0850F, 38093C0875E[2], 38093C0900E[2], 38093C0925E[2], 38093C0950E[2], 38093C0975E[2], 38093C1000E[2], 38093C1025E[2], 38093C1050E[2], 38093C1075E[2], 38093C1100E[2], 38093C1125E[2]. 38093C1150E[2], 38093C1175E[2], 38093C1200E[2], 38093C1225E[2], 38093C1250E[2], 38093C1275E[2], 38093C1300E[2], 38093C1325E[2], 38093C1350E[2] | |
| CITY OF WOODWORTH[1] | 380949 | 10160002 | 38093C0275E[2] | |

[1]No Special Flood Hazards Identified
[2]Panel Not Printed

## 1.4 Considerations for using this Flood Insurance Study Report

The NFIP encourages State and local governments to implement sound floodplain management programs. To assist in this endeavor, each FIS Report provides floodplain data, which may include a combination of the following: 10-, 4-, 2-, 1-, and 0.2-percent annual chance flood elevations (the 1% annual chance flood elevation is also referred to as the Base Flood Elevation (BFE)); delineations of the 1% annual chance and 0.2% annual chance floodplains; and 1% annual chance floodway. This information is presented on the FIRM and/or in many components of the FIS Report, including Flood Profiles, Floodway Data tables, Summary of Non-Coastal Stillwater Elevations tables, and Coastal Transect Parameters tables (not all components may be provided for a specific FIS).

This section presents important considerations for using the information contained in this FIS Report and the FIRM, including changes in format and content. Figures 1, 2, and 3 present information that applies to using the FIRM with the FIS Report.

- Part or all of this FIS Report may be revised and republished at any time. In addition, part of this FIS Report may be revised by a Letter of Map Revision (LOMR), which does not involve republication or redistribution of the FIS Report. Refer to Section 6.5 of this FIS Report for information about the process to revise the FIS Report and/or FIRM.

  It is, therefore, the responsibility of the user to consult with community officials by contacting the community repository to obtain the most current FIS Report components. Communities participating in the NFIP have established repositories of flood hazard data for floodplain management and flood insurance purposes. Community map repository addresses are provided in Table 31, "Map Repositories," within this FIS Report.

- New FIS Reports are frequently developed for multiple communities, such as entire counties. A countywide FIS Report incorporates previous FIS Reports for individual communities and the unincorporated area of the county (if not jurisdictional) into a single document and supersedes those documents for the purposes of the NFIP.

  The initial Countywide FIS Report for Stutsman County became effective on May 24, 2011. Refer to Table 28 for information about subsequent revisions to the FIRMs.

- Selected FIRM panels for the community may contain information (such as floodways and cross sections) that was previously shown separately on the corresponding Flood Boundary and Floodway Map panels. In addition, former flood hazard zone designations have been changed as follows:

| Old Zone | New Zone |
|---|---|
| A1 through A30 | AE |
| V1 through V30 | VE |
| B | X (shaded) |
| C | X (unshaded) |

- FEMA does not impose floodplain management requirements or special insurance ratings based on Limit of Moderate Wave Action (LiMWA) delineations at this time. The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. If the LiMWA is shown on the FIRM, it is being provided by FEMA as information only. For communities

that do adopt Zone VE building standards in the area defined by the LiMWA, additional Community Rating System (CRS) credits are available. Refer to Section 2.5.4 for additional information about the LiMWA.

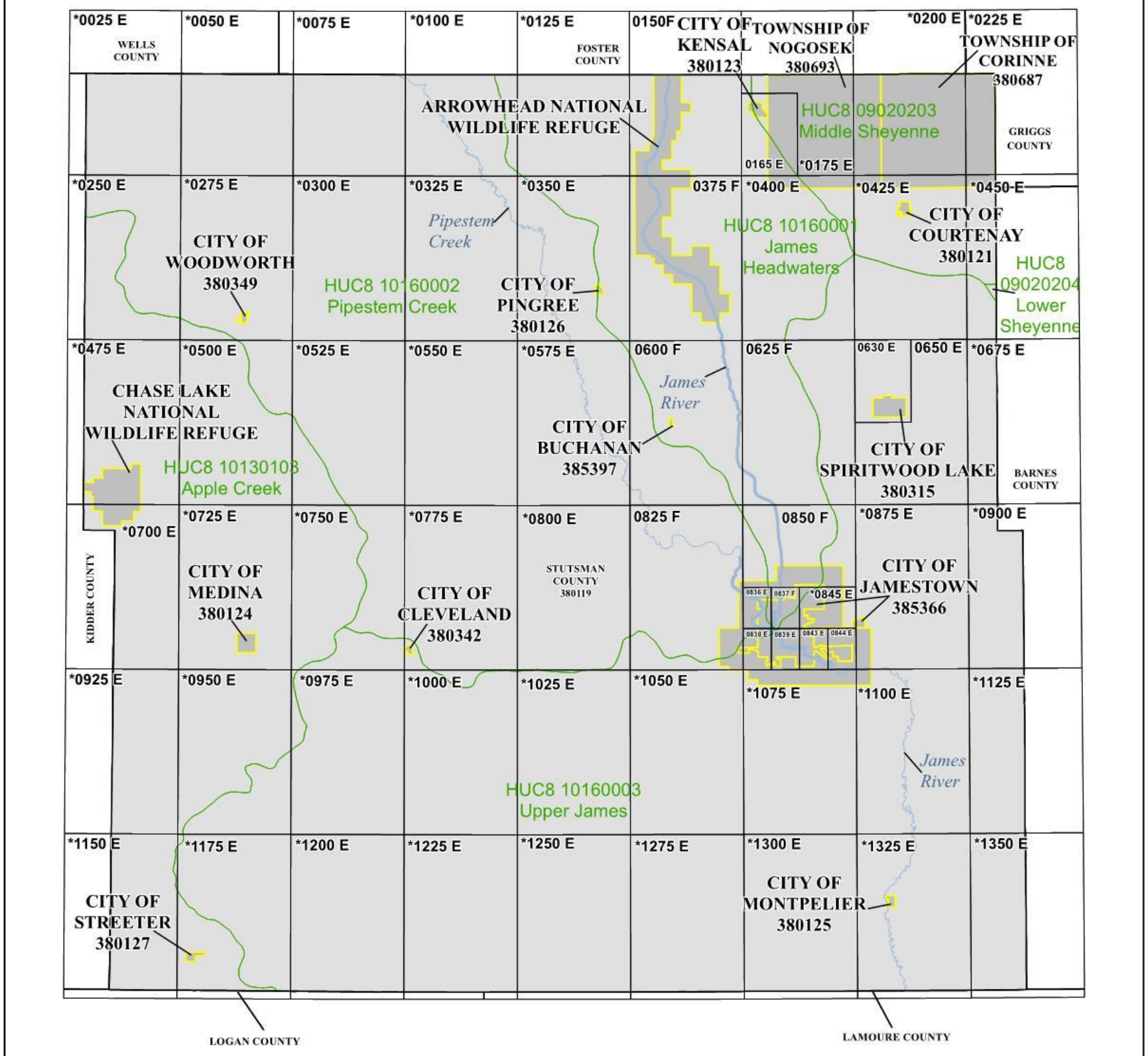
The CRS is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. Visit the FEMA Web site at http://www.fema.gov or contact your appropriate FEMA Regional Office for more information about this program.

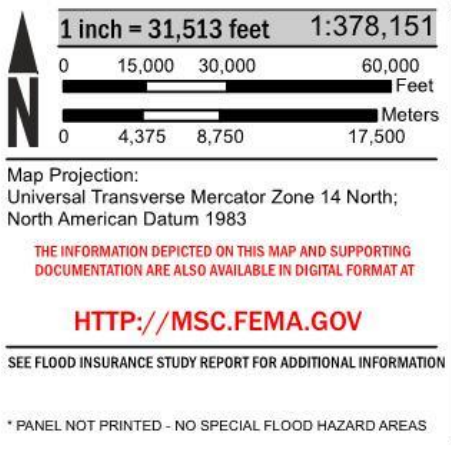
- Previous FIS Reports and FIRMs may have included levees that were accredited as providing protection from the 1% annual chance flood based on the information available and the mapping standards of the NFIP at that time. For FEMA to continue to accredit the identified levees with providing protection from the base flood, the levees must meet the criteria of the Code of Federal Regulations, Title 44, Section 65.10 (44 CFR 65.10), titled "Mapping of Areas Protected by Levee Systems."

  Since the status of levees is subject to change at any time, the user should contact the appropriate agency for the latest information regarding levees presented in Table 9 of this FIS Report. For levees owned or operated by the U.S. Army Corps of Engineers (USACE), information may be obtained from the USACE national levee database. For all other levees, the user is encouraged to contact the appropriate local community.

- FEMA has developed a *Guide to Flood Maps* (FEMA 258) and online tutorials to assist users in accessing the information contained on the FIRM. These include how to read panels and step-by-step instructions to obtain specific information. To obtain this guide and other assistance in using the FIRM, visit the FEMA Web site at http://www.fema.gov.

**Figure 1: FIRM Panel Index**



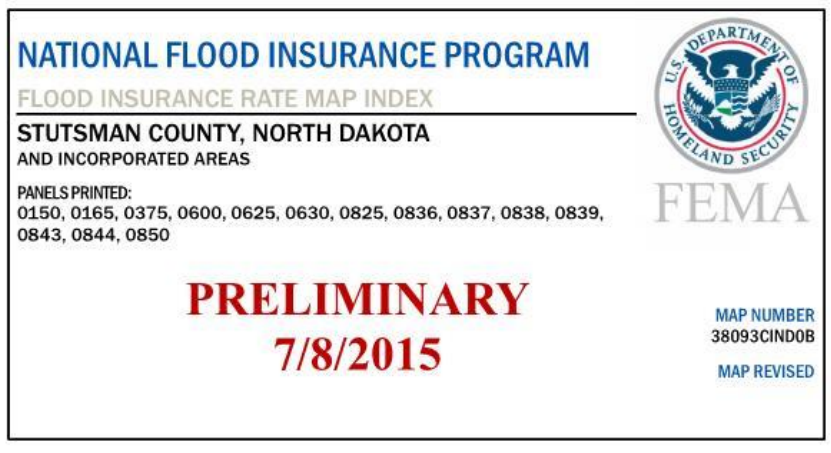



**Figure 2: FIRM Notes to Users**

# NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products, or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Map Service Center at the number listed above.

For community and countywide map dates, refer to Table 28 in this FIS Report.

To determine if flood insurance is available in the community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

PRELIMINARY FIS REPORT: FEMA maintains information about map features, such as street locations and names, in or near designated flood hazard areas. Requests to revise information in or near designated flood hazard areas may be provided to FEMA during the community review period, at the final Consultation Coordination Officer's meeting, or during the statutory 90-day appeal period. Approved requests for changes will be shown on the final printed FIRM.

The map is for use in administering the NFIP. It may not identify all areas subject to flooding, particularly from local drainage sources of small size. Consult the community map repository to find updated or additional flood hazard information.

BASE FLOOD ELEVATIONS: For more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables within this FIS Report. Use the flood elevation data within the FIS Report in conjunction with the FIRM for construction and/or floodplain management.

FLOODWAY INFORMATION: Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the FIS Report for this jurisdiction.

**Figure 2. FIRM Notes to Users *(continued)***

FLOOD CONTROL STRUCTURE INFORMATION: Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 4.3 "Non-Levee Flood Protection Measures" of this FIS Report for information on flood control structures for this jurisdiction.

PROJECTION INFORMATION: The projection used in the preparation of the map was Universal Transverse Mercator (UTM) Zone 14. The horizontal datum was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

ELEVATION DATUM: Flood elevations on the FIRM are referenced to North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

*NGS Information Services*
*NOAA, N/NGS12*
*National Geodetic Survey*
*SSMC-3, #9202*
*1315 East-West Highway*
*Silver Spring, Maryland 20910-3282*
*(301) 713-3242*

Local vertical monuments may have been used to create the map. To obtain current monument information, please contact the appropriate local community listed in Table 31 of this FIS Report.

BASE MAP INFORMATION: Base map information shown on the FIRM was provided in digital format by the United States Geologic Survey (USGS). For information about base maps, refer to Section 6.2 “Base Map” in this FIS Report.

The map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables may reflect stream channel distances that differ from what is shown on the map.

Corporate limits shown on the map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after the map was published, map users should contact appropriate community officials to verify current corporate limit locations.

## NOTES FOR FIRM INDEX

REVISIONS TO INDEX: As new studies are performed and FIRM panels are updated within Stutsman County, North Dakota, corresponding revisions to the FIRM Index will be incorporated within the FIS Report to reflect the effective dates of those panels. Please refer to Table 28 of this FIS Report to determine the most recent FIRM revision date for each community. The most recent FIRM panel effective date will correspond to the most recent index date.

**Figure 2. FIRM Notes to Users *(continued)***

**SPECIAL NOTES FOR SPECIFIC FIRM PANELS**

This Notes to Users section was created specifically for Stutsman County, North Dakota and Incorporated Areas, effective December 31, 9999.

FLOOD RISK REPORT: A Flood Risk Report (FRR) may be available for many of the flooding sources and communities referenced in this FIS Report. The FRR is provided to increase public awareness of flood risk by helping communities identify the areas within their jurisdictions that have the greatest risks. Although non-regulatory, the information provided within the FRR can assist communities in assessing and evaluating mitigation opportunities to reduce these risks. It can also be used by communities developing or updating flood risk mitigation plans. These plans allow communities to identify and evaluate opportunities to reduce potential loss of life and property. However, the FRR is not intended to be the final authoritative source of all flood risk data for a project area; rather, it should be used with other data sources to paint a comprehensive picture of flood risk.

**Figure 3: Map Legend for FIRM**

**SPECIAL FLOOD HAZARD AREAS:** *The 1% annual chance flood, also known as the base flood or 100-year flood, has a 1% chance of happening or being exceeded each year. Special Flood Hazard Areas are subject to flooding by the 1% annual chance flood. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood. The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights. See note for specific types. If the floodway is too narrow to be shown, a note is shown.*



Special Flood Hazard Areas subject to inundation by the 1% annual chance flood (Zones A, AE, AH, AO, AR, A99, V and VE)

Zone A — The flood insurance rate zone that corresponds to the 1% annual chance floodplains. No base (1% annual chance) flood elevations (BFEs) or depths are shown within this zone.

Zone AE — The flood insurance rate zone that corresponds to the 1% annual chance floodplains. Base flood elevations derived from the hydraulic analyses are shown within this zone, either at cross section locations or as static whole-foot elevations that apply throughout the zone.

Zone AH — The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot BFEs derived from the hydraulic analyses are shown at selected intervals within this zone.

Zone AO — The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot depths derived from the hydraulic analyses are shown within this zone.

Zone AR — The flood insurance rate zone that corresponds to areas that were formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

Zone A99 — The flood insurance rate zone that corresponds to areas of the 1% annual chance floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No base flood elevations or flood depths are shown within this zone.

Zone V — The flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations are not shown within this zone.

Zone VE — Zone VE is the flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations derived from the coastal analyses are shown within this zone as static whole-foot elevations that apply throughout the zone.



Regulatory Floodway determined in Zone AE.

**Figure 3: Map Legend for FIRM *(continued)***

**OTHER AREAS OF FLOOD HAZARD**



Shaded Zone X: Areas of 0.2% annual chance flood hazards and areas of 1% annual chance flood hazards with average depths of less than 1 foot or with drainage areas less than 1 square mile.

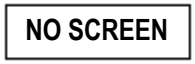
Future Conditions 1% Annual Chance Flood Hazard – Zone X: The flood insurance rate zone that corresponds to the 1% annual chance floodplains that are determined based on future-conditions hydrology. No base flood elevations or flood depths are shown within this zone.

Zone X Protected by Accredited Levee: Areas protected by an accredited levee, dike or other flood control structures. See Notes to Users for important information.

**OTHER AREAS**



Zone D (Areas of Undetermined Flood Hazard): The flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible




Unshaded Zone X: Areas determined to be outside the 0.2% annual chance floodplain

**FLOOD HAZARD AND OTHER BOUNDARY LINES**



Flood Zone Boundary



Limit of Study



Jurisdiction Boundary



Limit of Moderate Wave Action (LiMWA): Indicates the inland limit of the area affected by waves greater than 1.5 feet

**GENERAL STRUCTURES**



*Aqueduct*
*Channel*
*Culvert*
*Storm Sewer*

Channel, Culvert, Aqueduct, or Storm Sewer



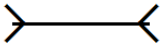
*Dam*
*Jetty*
*Weir*

Dam, Jetty, Weir

Levee, Dike or Floodwall accredited or provisionally accredited to provide protection from the 1% annual chance flood



Levee, Dike or Floodwall not accredited to provide protection from the 1% annual chance flood.



*Bridge*

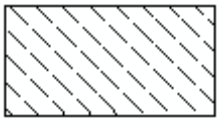
Bridge

**Figure 3: Map Legend for FIRM *(continued)***

**COASTAL BARRIER RESOURCES SYSTEM (CBRS) AND OTHERWISE PROTECTED AREAS (OPA):** *CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas. See Notes to Users for important information.*

**CBRS AREA**
**09/30/2009**

Coastal Barrier Resources System Area: Labels are shown to clarify where this area shares a boundary with an incorporated area or overlaps with the floodway.



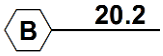
**OTHERWISE PROTECTED AREA**
**09/30/2009**

Otherwise Protected Area

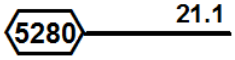
**REFERENCE MARKERS**


River mile Markers

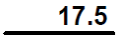
**CROSS SECTION & TRANSECT INFORMATION**



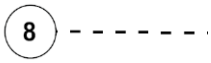

Lettered Cross Section with Regulatory Water Surface Elevation (BFE)




Numbered Cross Section with Regulatory Water Surface Elevation (BFE)




Unlettered Cross Section with Regulatory Water Surface Elevation (BFE)



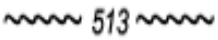

Coastal Transect



Profile Baseline: Indicates the modeled flow path of a stream and is shown on FIRM panels for all valid studies with profiles or otherwise established base flood elevation.



Coastal Transect Baseline: Used in the coastal flood hazard model to represent the 0.0-foot elevation contour and the starting point for the transect and the measuring point for the coastal mapping.




Base Flood Elevation Line (shown for flooding sources for which no cross sections or profile are available)

**ZONE AE**
**(EL 16)**

Static Base Flood Elevation value (shown under zone label)

**ZONE AO**
**(DEPTH 2)**

Zone designation with Depth

**ZONE AO**
**(DEPTH 2)**
**(VEL 15 FPS)**

Zone designation with Depth and Velocity

**Figure 3: Map Legend for FIRM *(continued)***

| **BASE MAP FEATURES** | |
|---|---|
| *Missouri Creek* | River, Stream or Other Hydrographic Feature |
| 234 | Interstate Highway |
| 234 | U.S. Highway |
| 234 | State Highway |
| 234 | County Highway |
| MAPLE LANE | Street, Road, Avenue Name, or Private Drive if shown on Flood Profile |
| *RAILROAD* | Railroad |
| | Horizontal Reference Grid Line |
| | Horizontal Reference Grid Ticks |
| + | Secondary Grid Crosshairs |
| Land Grant | Name of Land Grant |
| 7 | Section Number |
| R. 43 W. T. 22 N. | Range, Township Number |
| **$^{42}76^{000m}$E** | Horizontal Reference Grid Coordinates (UTM) |
| **365000 FT** | Horizontal Reference Grid Coordinates (State Plane) |
| **80° 16’ 52.5”** | Corner Coordinates (Latitude, Longitude) |

# SECTION 2.0 – FLOODPLAIN MANAGEMENT APPLICATIONS

## 2.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1% annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2% annual chance (500-year) flood is employed to indicate additional areas of flood hazard in the community.

Each flooding source included in the project scope has been studied and mapped using professional engineering and mapping methodologies that were agreed upon by FEMA and Stutsman County as appropriate to the risk level. Flood risk is evaluated based on factors such as known flood hazards and projected impact on the built environment. Engineering analyses were performed for each studied flooding source to calculate its 1% annual chance flood elevations; elevations corresponding to other floods (e.g. 10-, 4-, 2-, 0.2-percent annual chance, etc.) may have also been computed for certain flooding sources. Engineering models and methods are described in detail in Section 5.0 of this FIS Report. The modeled elevations at cross sections were used to delineate the floodplain boundaries on the FIRM; between cross sections, the boundaries were interpolated using elevation data from various sources. More information on specific mapping methods is provided in Section 6.0 of this FIS Report.

Depending on the accuracy of available topographic data (Table 23), study methodologies employed (Section 5.0), and flood risk, certain flooding sources may be mapped to show both the 1% and 0.2% annual chance floodplain boundaries, regulatory water surface elevations (BFEs), and/or a regulatory floodway. Similarly, other flooding sources may be mapped to show only the 1% annual chance floodplain boundary on the FIRM, without published water surface elevations. In cases where the 1% and 0.2% annual chance floodplain boundaries are close together, only the 1% annual chance floodplain boundary is shown on the FIRM. Figure 3, "Map Legend for FIRM," describes the flood zones that are used on the FIRMs to account for the varying levels of flood risk that exist along flooding sources within the project area. Table 2 and Table 3 indicate the flood zone designations for each flooding source and each community within Stutsman County, respectively.

Table 2, "Flooding Sources Included in this FIS Report," lists each flooding source, including its study limits, affected communities, mapped zone on the FIRM, and the completion date of its engineering analysis from which the flood elevations on the FIRM and in the FIS Report were derived. Descriptions and dates for the latest hydrologic and hydraulic analyses of the flooding sources are shown in Table 13. Floodplain boundaries for these flooding sources are shown on the FIRM (published separately) using the symbology described in Figure 3. On the map, the 1% annual chance floodplain corresponds to the SFHAs. The 0.2% annual chance floodplain shows areas that, although out of the regulatory floodplain, are still subject to flood hazards.

Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data. The procedures to remove these areas from the SFHA are described in Section 6.5 of this FIS Report.

## 2.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself.

One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard.

For purposes of the NFIP, a floodway is used as a tool to assist local communities in balancing floodplain development against increasing flood hazard. With this approach, the area of the 1% annual chance floodplain on a river is divided into a floodway and a floodway fringe based on hydraulic modeling. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment in order to carry the 1% annual chance flood. The floodway fringe is the area between the floodway and the 1% annual chance floodplain boundaries where encroachment is permitted. The floodway must be wide enough so that the floodway fringe could be completely obstructed without increasing the water-surface elevation of the 1% annual chance flood more than 1 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 4.

To participate in the NFIP, Federal regulations require communities to limit increases caused by encroachment to 1.0 foot, provided that hazardous velocities are not produced. North Dakota regulations require communities in Stutsman County to limit increases caused by encroachment to 1.0 feet and several communities have adopted additional restrictions. The floodways in this project are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway projects.

**Figure 4: Floodway Schematic**

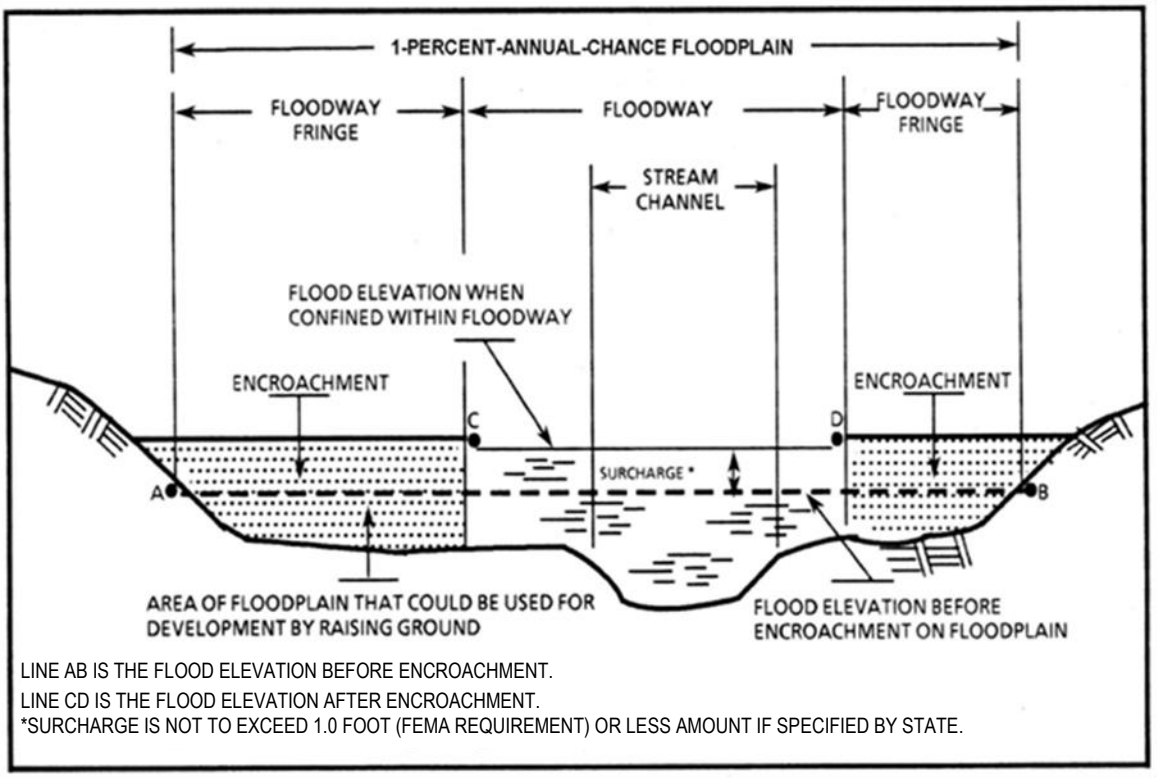


**Table 2: Flooding Sources Included in this FIS Report**

| Flooding Source | Community | Downstream Limit | Upstream Limit | HUC-8 Sub-Basin(s) | Length (mi) (streams or coastlines) | Area ($mi^2$) (estuaries or ponding) | Floodway (Y/N) | Zone shown on FIRM | Date of Analysis |
|---|---|---|---|---|---|---|---|---|---|
| James River | Stutsman County<br>City of Jamestown | City of Jamestown Corporate Limits | County Boundary | 10160001<br>10160003 | 41.1 | NA | Y | AE, A, X | 1997<br>2014 |
| Pipestem Creek | Stutsman County<br>City of Jamestown | Confluence with James River | County Boundary | 10160002 | 7.2 | NA | Y | AE, A, X | 1997<br>2014 |
| Spiritwood Lake | Stutsman County<br>City of Spiritwood Lake | NA | NA | 10160003 | NA | NA | N | A, X | 2011 |
| Unnamed | City of Kensal | NA | NA | 09020203 | NA | NA | N | A, X | 1979 |

Floodway widths presented in this FIS Report and on the FIRM were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. For certain stream segments, floodways were adjusted so that the amount of floodwaters conveyed on each side of the floodplain would be reduced equally. The results of the floodway computations have been tabulated for selected cross sections and are shown in Table 24, "Floodway Data."

All floodways that were developed for this FIS project are shown on the FIRM using the symbology described in Figure 3. In cases where the floodway and l% annual chance floodplain boundaries are either close together or collinear, only the floodway boundary has been shown on the FIRM. For information about the delineation of floodways on the FIRM, refer to Section 6.3.

## 2.3 Base Flood Elevations

The hydraulic characteristics of flooding sources were analyzed to provide estimates of the elevations of floods of the selected recurrence intervals. The Base Flood Elevation (BFE) is the elevation of the 1% annual chance flood. These BFEs are most commonly rounded to the whole foot, as shown on the FIRM, but in certain circumstances or locations they may be rounded to 0.1 foot. Cross section lines shown on the FIRM may also be labeled with the BFE rounded to 0.1 foot. Whole-foot BFEs derived from engineering analyses that apply to coastal areas, areas of ponding, or other static areas with little elevation change may also be shown at selected intervals on the FIRM.

Cross sections with BFEs shown on the FIRM correspond to the cross sections shown in the Floodway Data table and Flood Profiles in this FIS Report. BFEs are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM.

## 2.4 Non-Encroachment Zones

Some States and communities use non-encroachment zones to manage floodplain development. While not a FEMA designated floodway, the non-encroachment zone represents that area around the stream that should be reserved to convey the 1% annual chance flood event.

Non-encroachment determinations may be delineated where it is not possible to delineate floodways because specific channel profiles with bridge and culvert geometry were not developed. Any non-encroachment determinations for this Flood Risk Project have been tabulated for selected cross sections and are shown in Table 25, "Flood Hazard and Non-Encroachment Data for Selected Streams."

## 2.5 Coastal Flood Hazard Areas

### 2.5.1 Water Elevations and the Effects of Waves

This section is not applicable to this FIS project.

**Figure 5: Wave Runup Transect Schematic**

**[Not Applicable to this FIS Project]**

### 2.5.2 Floodplain Boundaries and BFEs for Coastal Areas

This section is not applicable to this FIS project.

### 2.5.3 Coastal High Hazard Areas

This section is not applicable to this FIS project.

**Figure 6: Coastal Transect Schematic**

**[Not Applicable to this FIS Project]**

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### 2.5.4 Limit of Moderate Wave Action

This section is not applicable to this FIS project.

## SECTION 3.0 – INSURANCE APPLICATIONS

### 3.1 National Flood Insurance Program Insurance Zones

For flood insurance applications, the FIRM designates flood insurance rate zones as described in Figure 3, "Map Legend for FIRM." Flood insurance zone designations are assigned to flooding sources based on the results of the hydraulic or coastal analyses. Insurance agents use the zones shown on the FIRM and depths and base flood elevations in this FIS Report in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

The 1% annual chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (e.g. Zones A, AE, V, VE, etc.), and the 0.2% annual chance floodplain boundary corresponds to the boundary of areas of additional flood hazards.

Table 3 lists the flood insurance zones in the unincorporated and incorporated areas of Stutsman County.

**Table 3: Flood Zone Designations by Community**

| Community | Flood Zone(s) |
|---|---|
| CITY OF BUCHANAN | X |
| CITY OF CLEVELAND | X |
| CORINNE TOWNSHIP | X |
| CITY OF COURTENAY | X |
| CITY OF JAMESTOWN | AE, X, X (shaded) |
| CITY OF KENSAL | A, X |
| CITY OF MEDINA | X |
| CITY OF MONTPELIER | X |
| NOGOSEK TOWNSHIP | X |
| CITY OF PINGREE | X |
| CITY OF SPIRITWOOD LAKE | AE, X |
| CITY OF STREETER | X |
| CITY OF WOODWORTH | X |
| STUTSMAN COUNTY | A, AE, X, X (shaded) |

### 3.2 Coastal Barrier Resources System

The Coastal Barrier Resources Act (CBRA) of 1982 was established by Congress to create areas along the Atlantic and Gulf coasts and the Great Lakes, where restrictions for Federal financial assistance including flood insurance are prohibited. In 1990, Congress passed the Coastal Barrier Improvement Act (CBIA), which increased the extent of areas established by the CBRA and added "Otherwise Protected Areas" (OPA) to the system. These areas are collectively referred to as the John. H Chafee Coastal Barrier Resources System (CBRS). The CBRS boundaries that have been identified in the project area are in Table 4, "Coastal Barrier Resource System Information."

**Table 4: Coastal Barrier Resources System Information**

**[Not Applicable to this FIS Project]**

## SECTION 4.0 – AREA STUDIED

### 4.1 Basin Description

Table 5 contains a description of the characteristics of the HUC-8 sub-basins within which each community falls. The table includes the main flooding sources within each basin, a brief description of the basin, and its drainage area.

**Table 5: Basin Characteristics**

| HUC-8 Sub-Basin Name | HUC-8 Sub-Basin Number | Primary Flooding Source | Description of Affected Area | Drainage Area ($mi^2$) |
|---|---|---|---|---|
| Apple. North Dakota. | 10130103 | Apple Creek Tributaries | Tributary to Apple Creek | 3,631 |
| James Headwaters. North Dakota. | 10160001 | James River | Upper James River Tributaries | 1,696 |
| Lower Sheyenne. North Dakota. | 09020204 | Sheyenne River Tributaries | Tributary to Sheyenne River | 1,722 |
| Middle Sheyenne. North Dakota. | 09020203 | Sheyenne River Tributaries | Tributary to Sheyenne River | 2,017 |
| Pipestem. North Dakota. | 10160002 | Pipestem Creek | Pipestem Creek and Tributaries | 1,070 |
| Upper James. North Dakota, South Dakota. | 10160003 | James River | Upper James River and Tributaries | 4,469 |

## 4.2 Principal Flood Problems

Table 6 contains a description of the principal flood problems that have been noted for Stutsman County by flooding source.

**Table 6: Principal Flood Problems**

| Flooding Source | Description of Flood Problems |
|---|---|
| James River | Floods in the City of Jamestown typically result from spring snowmelt runoff, occasionally augmented by spring rains. Jamestown Dam was constructed on the James River in 1954. Even with the reservoir in place, the City of Jamestown as experienced flooding on several occasions. |
| Pipestem Creek | Floods in the City of Jamestown typically result from spring snowmelt runoff, occasionally augmented by spring rains. Pipestem Dam was constructed on the Pipestem Creek in 1974. Even with both reservoirs in place, the City of Jamestown as experienced flooding on several occasions. |
| Spiritwood Lake | High water levels on Spiritwood Lake have also created problems periodically. The lake reached a high of 1444.5 in 1975 and 1443.5 in 1976. A roadway has been constructed across the natural outlet effectively raising the outlet from 1442.3 to 1447.3. There are no culverts in the roadway, so the only outlet is an overflow section. Due to the large lake area and limited discharge capacity, flood levels persist for a considerable time. |

Table 7 contains information about historic flood elevations in the communities within Stutsman County.

**Table 7: Historic Flooding Elevations**

**[Not Applicable to this FIS Project]**

## 4.3 Non-Levee Flood Protection Measures

Table 8 contains information about non-levee flood protection measures within Stutsman County such as dams, jetties, and or dikes. Levees are addressed in Section 4.4 of this FIS Report.

**Table 8: Non-Levee Flood Protection Measures**

| Flooding Source | Structure Name | Type of Measure | Location | Description of Measure |
|---|---|---|---|---|
| JAMES RIVER | JAMESTOWN CITY DAM | Dam | Upstream of City of Jamestown | Multi-Purpose Dam constructed in 1954 by USBR for water supply and flood control protection. |
| PIPESTEM CREEK | PIPESTEM DAM | Dam | Upstream of City of Jamestown | Flood Control Dam constructed by US Army Corps of Engineers in 1974. |

## 4.4 Levees

This section is not applicable to this FIS project.

**Table 9: Levees**

**[Not Applicable to this FIS Project]**

# SECTION 5.0 – ENGINEERING METHODS

For the flooding sources in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that are expected to be equaled or exceeded at least once on the average during any 10-, 25-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 25-, 50-, 100-, and 500-year floods, have a 10-, 4-, 2-, 1-, and 0.2% annual chance, respectively, of being equaled or exceeded during any year.

Although the recurrence interval represents the long-term, average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 100-year flood (1-percent chance of annual exceedance) during the term of a 30-year mortgage is approximately 26 percent (about 3 in 10); for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

The engineering analyses described here incorporate the results of previously issued Letters of Map Change (LOMCs) listed in Table 27, "Incorporated Letters of Map Change," which include Letters of Map Revision (LOMRs). For more information about LOMRs, refer to Section 6.5, "FIRM Revisions."

## 5.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak elevation-frequency relationships for floods of the selected recurrence intervals for each flooding source studied. Hydrologic analyses are typically performed at the watershed level. Depending on factors such as watershed size and shape, land use and urbanization, and natural or man-made storage, various models or methodologies may be applied. A summary of the hydrologic methods applied to develop the discharges used in the hydraulic analyses for each stream is provided in Table 13. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

A summary of the discharges is provided in Table 10. Frequency Discharge-Drainage Area Curves used to develop the hydrologic models may also be shown in Figure 7 for selected flooding sources. A summary of stillwater elevations developed for non-coastal flooding sources is provided in Table 11. (Coastal stillwater elevations are discussed in Section 5.3 and shown in Table 17.) Stream gage information is provided in Table 12.

## Table 10: Summary of Discharges

| Flooding Source | Location | *Drainage Area (Square Miles)* | Peak Discharge (cfs) | | | | |
|---|---|---|---|---|---|---|---|
| | | | 10% Annual Chance | 4% Annual Chance | 2% Annual Chance | 1% Annual Chance | 0.2% Annual Chance |
| James River | Old ND Highway 52 | 56 | * | * | * | 2,330 | * |
| | Near Fessenden | 185 | * | * | * | 4,625 | * |
| | Upstream of Rocky Run | 315 | * | * | * | 6,262 | * |
| | USGS Gage Near Grace City | 507 | * | * | * | 9,720 | * |
| | USGS Gage Above Arrowwood Lake | 645 | * | * | * | 9,920 | * |
| | Upstream Jamestown Dam | 1,107 | * | * | * | 13,320 | * |
| | Above Confluence of Pipestem Creek | 1,140 | 760 | * | 1,800 | 1,800 | 1,800 |
| | At Ice House Dam | --[1] | 780 | * | 1,810 | 1,820 | 1,920 |
| | At Highway 281 | --[1] | 780 | * | 1,810 | 1,840 | 2,100 |
| | At Oxbow Lake | --[1] | 900 | * | 1,820 | 1,850 | 2,800 |
| | At USGS Gage, approx. 200 feet upstream of Interstate 94 bridge | --[1] | 980 | * | 1,850 | 1,870 | 2,900 |
| | Below Interstate 94 | --[1] | 1,080 | * | 1,860 | 1,880 | 2,990 |
| | Approx. 1700' downstream of Midland Continental Railroad | 1,850 | 1,160 | * | 1,860 | 1,900 | 2,900 |
| Pipestem Creek | Above Confluence with the James River | 600 | 390 | * | 780 | 1,800 | 1,800 |
| | Above detailed study limit to Pipestem Dam | 645 | * | * | * | 1,050 | * |

*Not calculated for this FIS Project.
[1]Data Not Available

## Figure 7: Frequency Discharge-Drainage Area Curves for Stutsman County

## [Not Applicable to this FIS Project]

## Table 11: Summary of Non-Coastal Stillwater Elevations

## [Not Applicable to this FIS Project]

**Table 12: Stream Gage Information used to Determine Discharges**

**[Not Applicable to this FIS Project]**

## 5.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Base flood elevations on the FIRM represent the elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report. Rounded whole-foot elevations may be shown on the FIRM in coastal areas, areas of ponding, and other areas with static base flood elevations. These whole-foot elevations may not exactly reflect the elevations derived from the hydraulic analyses. Flood elevations shown on the FIRM are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM. The hydraulic analyses for this FIS were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

For streams for which hydraulic analyses were based on cross sections, locations of selected cross sections are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 6.3), selected cross sections are also listed on Table 24, "Floodway Data."

A summary of the methods used in hydraulic analyses performed for this project is provided in Table 13. Roughness coefficients are provided in Table 14. Roughness coefficients are values representing the frictional resistance water experiences when passing overland or through a channel. They are used in the calculations to determine water surface elevations. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

## Table 13: Summary of Hydrologic and Hydraulic Analyses

| Flooding Source | Study Limits<br>Downstream Limit Upstream Limit | Hydrologic Model or Method Used | Hydraulic Model or Method Used | Date Analyses Completed | Flood Zone on FIRM | Special Considerations |
|---|---|---|---|---|---|---|
| James River | D/S-City of Jamestown Corporate Limits<br>D/S-Jamestown Dam | HEC-1 | HEC-2 | 1997 | AE | Operation of Jamestown and Pipestem Dams were accounted for in the modelling. |
| James River | Jamestown Dam to Stutsman/Foster County | HEC-HMS | HEC-RAS (Approximate) | 2014 | A | |
| Pipestem Creek | D/S-Confluence w/James River<br>U/S-Pipestem Dam | HEC-1 | HEC-2 | 1997 | AE | Operation of Jamestown and Pipestem Dams were accounted for in the modelling. |
| Pipestem Creek | Detailed Study limit to Pipestem Dam | HEC-HMS | HEC-RAS (Approximate) | 2014 | A | |
| Spiritwood Lake | D/S-4713 Street SE<br>U/S-Spiritwood Lake | HEC-HMS | HEC-RAS | 2009 | AE | Outlet controlled by roadway elevation. |

**Table 14: Roughness Coefficients**

| Flooding Source | Channel “n” | Overbank “n” |
|---|---|---|
| James River (Detailed) | 0.030 to 0.060 | 0.100 |
| James River (Approximate) | 0.045 to 0.06 | 0.1 to 0.12 |
| Pipestem Creek (Detailed) | 0.040 to 0.064 | 0.100 |
| Pipestem Creek (Approximate) | 0.045 to 0.06 | 0.1 to 0.12 |
| Spiritwood Lake | 0.055 | 0.09 |

## 5.3 Coastal Analyses

This section is not applicable to this FIS project.

**Table 15: Summary of Coastal Analyses**
**[Not Applicable to this FIS Project]**

### 5.3.1 Total Stillwater Elevations

This section is not applicable to this FIS project.

**Figure 8: 1% Annual Chance Total Stillwater Elevations for Coastal Areas**
**[Not Applicable to this FIS Project]**

**Table 16: Tide Gage Analysis Specifics**
**[Not Applicable to this FIS Project]**

### 5.3.2 Waves

This section is not applicable to this FIS project.

### 5.3.3 Coastal Erosion

This section is not applicable to this FIS project.

### 5.3.4 Wave Hazard Analyses

This section is not applicable to this FIS project.

**Table 17: Coastal Transect Parameters**

**[Not Applicable to this FIS Project]**

**Figure 9: Transect Location Map**

**[Not Applicable to this FIS Project]**

## 5.4 Alluvial Fan Analyses

This section is not applicable to this FIS project.

**Table 18: Summary of Alluvial Fan Analyses**

**[Not Applicable to this FIS Project]**

**Table 19: Results of Alluvial Fan Analyses**

**[Not Applicable to this FIS Project]**

## SECTION 6.0 – MAPPING METHODS

### 6.1 Vertical and Horizontal Control

All FIS Reports and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum used for newly created or revised FIS Reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD29). With the completion of the North American Vertical Datum of 1988 (NAVD88), many FIS Reports and FIRMs are now prepared using NAVD88 as the referenced vertical datum.

Flood elevations shown in this FIS Report and on the FIRMs are referenced to NAVD88. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between NGVD29 and NAVD88 or other datum conversion, visit the National Geodetic Survey website at www.ngs.noaa.gov, or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

Temporary vertical monuments are often established during the preparation of a flood hazard analysis for the purpose of establishing local vertical control. Although these monuments are not shown on the FIRM, they may be found in the archived project documentation associated with the FIS Report and the FIRMs for this community. Interested individuals may contact FEMA to access these data.

To obtain current elevation, description, and/or location information for benchmarks in the area, please contact information services Branch of the NGS at (301) 713-3242, or visit their website at www.ngs.noaa.gov.

The datum conversion locations and values that were calculated for Stutsman County are provided in Table 20.

**Table 20: Countywide Vertical Datum Conversion**

**[Not Applicable to this FIS Project]**

A countywide conversion factor could not be generated for Stutsman County because the maximum variance from average exceeds 0.25 feet. Calculations for the vertical offsets on a stream by stream basis are depicted in Table 21.

**Table 21: Stream Based Vertical Datum Conversion**

| Flooding Source | Average Vertical Datum Conversion Factor (feet) |
|---|---|
| James River | +1.24’ |
| Pipestem Creek | +1.25’ |
| Spiritwood Lake | +1.23’ |

## 6.2 Base Map

The FIRMs and FIS Report for this project have been produced in a digital format. The flood hazard information was converted to a Geographic Information System (GIS) format that meets FEMA’s FIRM database specifications and geographic information standards. This information is provided in a digital format so that it can be incorporated into a local GIS and be accessed more easily by the community. The FIRM Database includes most of the tabular information contained in the FIS Report in such a way that the data can be associated with pertinent spatial features. For example, the information contained in the Floodway Data table and Flood Profiles can be linked to the cross sections that are shown on the FIRMs. Additional information about the FIRM Database and its contents can be found in FEMA’s *Guidelines and Standards for Flood Risk Analysis and Mapping*, http://www.fema.gov/guidelines-and-standards-flood-risk-analysis-and-mapping.

Base map information shown on the FIRM was derived from the sources described in Table 22.

**Table 22: Base Map Sources**

| Data Type | Data Provider | Data Date | Data Scale | Data Description |
|---|---|---|---|---|
| Incorporated City Boundaries | ND Department of Transportation | 2013 | 24,000 | Digital vector lines and polygons for political boundaries and public lands. |
| National Hydrography Dataset (NHD) 1:24,000 | United States Geologic Survey | 2013 | 24,000 | High resolution water lines. |
| National Hydrography Dataset (NHD) 1:24,000 | United States Geologic Survey | 2013 | 24,000 | High resolution water areas. |
| ORTHOIMAGERY Submission for Upper James River | USDA/FSA | 2013 | 24,000 | The original countywide mosaic from the NAIP was converted to grayscale for mapping purposes with the original compression. |

Table 22: Base Map Sources *(continued)*

| Data Type | Data Provider | Data Date | Data Scale | Data Description |
|---|---|---|---|---|
| Section Polygons for the Public Land Survey System (PLSS) | North Dakota State Water Commission | 2013 | 24,000 | This layer is based on Geographic Coordinate Data Base (GCDB) coordinate data. The locations of Public Land Survey System (PLSS) corners, as represented in geographic coordinate pairs, were derived from a variety of source documents, which include U.S. General Land Office and BLM survey plats/notes, as well as survey data obtained from other U.S. Government agencies, private sector survey firms, and local governments. |
| USGS 7.5-Minute Series Topographic Maps | U.S.Geological Survey | 1989 | 24,000 | USGS has mapped the county with 1:24000 scale topographic maps (also referred to as 7.5-minute quadrangles). |
| USGS 7.5-Minute Series Topographic Maps | U.S.Geological Survey | 1989 | 24,000 | USGS has mapped the county with 1:24000 scale topographic maps (also referred to as 7.5-minute quadrangles). |

## 6.3 Floodplain and Floodway Delineation

The FIRM shows tints, screens, and symbols to indicate floodplains and floodways as well as the locations of selected cross sections used in the hydraulic analyses and floodway computations.

For riverine flooding sources, the mapped floodplain boundaries shown on the FIRM have been delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using the topographic elevation data described in Table 23.

In cases where the 1% and 0.2% annual chance floodplain boundaries are close together, only the 1% annual chance floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

The floodway widths presented in this FIS Report and on the FIRM were computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. Table 2 indicates the flooding sources for which floodways have been determined. The results of the floodway computations for those flooding sources have been tabulated for selected cross sections and are shown in Table 24, “Floodway Data.”

**Table 23: Summary of Topographic Elevation Data used in Mapping**

| Community | Flooding Source | Source for Topographic Elevation Data | | | |
|---|---|---|---|---|---|
| | | Description | Scale | Contour Interval | Citation |
| City of Jamestown | James River and Pipestem Creek | LIDAR | 1:1200 | 1’ | Merrick & Comp |
| City of Spiritwood Lake | Spiritwood Lake | LIDAR | 1:600 | 2’ | Furgo Horizons |
| City of Kensal | Unnamed Tributary | USGS Quadrangle | 1:24,000 | 10’ | USGS |
| Stutsman County | Spiritwood Lake | LIDAR | 1:600 | 2’ | Furgo Horizons |
| Stutsman County | James River and Pipestem Creek | LIDAR | DEM | DEM | USFWS2012 |

BFEs shown at cross sections on the FIRM represent the 1% annual chance water surface elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report.

## Table 24: Floodway Data

| LOCATION | | FLOODWAY | | | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION ( ) | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE[1] | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | REGULATORY (FEET NAVD88) | WITHOUT FLOODWAY (FEET NAVD88) | WITH FLOODWAY (FEET NAVD88) | INCREASE |
| A | 3,027,500 | 112 | 738 | 2.6 | 1381.2 | 1381.2 | 1381.4 | 0.2 |
| B | 3,030,350 | 110 | 834 | 2.3 | 1382.4 | 1382.4 | 1382.6 | 0.2 |
| C | 3,033,350 | 131 | 814 | 2.3 | 1383.5 | 1383.5 | 1383.6 | 0.1 |
| D | 3,034,492 | 83 | 670 | 2.8 | 1384 | 1384 | 1384.2 | 0.2 |
| E | 3,035,186 | 92 | 762 | 2.5 | 1384.4 | 1384.4 | 1384.6 | 0.2 |
| F | 3,035,946 | 88 | 841 | 2.3 | 1384.7 | 1384.7 | 1385 | 0.3 |
| G | 3,036,738 | 82 | 742 | 2.6 | 1384.9 | 1384.9 | 1385.2 | 0.3 |
| H | 3,038,698 | 126 | 964 | 2 | 1385.8 | 1385.8 | 1386.2 | 0.4 |
| I | 3,039,561 | 121 | 909 | 2.1 | 1386.3 | 1386.3 | 1386.7 | 0.4 |
| J | 3,040,545 | 103 | 809 | 2.3 | 1386.5 | 1386.5 | 1386.9 | 0.4 |
| K | 3,041,561 | 86 | 737 | 2.5 | 1386.7 | 1386.7 | 1387.1 | 0.4 |
| L | 3,042,299 | 107 | 829 | 2.3 | 1386.8 | 1386.8 | 1387.2 | 0.4 |
| M | 3,043,416 | 95 | 707 | 2.6 | 1387.1 | 1387.1 | 1387.5 | 0.4 |
| N | 3,044,416 | 104 | 693 | 2.7 | 1387.6 | 1387.6 | 1387.9 | 0.3 |
| O | 3,045,321 | 80 | 598 | 3.1 | 1388.1 | 1388.1 | 1388.4 | 0.3 |
| P | 3,046,323 | 120 | 955 | 1.9 | 1388.5 | 1388.5 | 1388.8 | 0.3 |
| Q | 3,047,162 | 90 | 822 | 2.2 | 1388.9 | 1388.9 | 1389.2 | 0.3 |
| R | 3,048,290 | 59 | 506 | 3.7 | 1389.5 | 1389.5 | 1389.8 | 0.3 |
| S | 3,049,078 | 61 | 504 | 3.7 | 1389.9 | 1389.9 | 1390.3 | 0.4 |
| T | 3,050,049 | 76 | 586 | 3.2 | 1390.5 | 1390.5 | 1390.9 | 0.4 |
| U | 3,050,846 | 94 | 613 | 3 | 1391.3 | 1391.3 | 1391.6 | 0.3 |

[1] Feet above mouth

TABLE 24

**FEDERAL EMERGENCY MANAGEMENT AGENCY**

**STUTSMAN COUNTY, ND AND INCORPORATED AREAS**

**FLOODWAY DATA**

**FLOODING SOURCE: JAMES RIVER**

| LOCATION | | FLOODWAY | | | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION ( ) | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE[1] | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | REGULATORY (FEET NAVD88) | WITHOUT FLOODWAY (FEET NAVD88) | WITH FLOODWAY (FEET NAVD88) | INCREASE |
| V | 3,051,919 | 327 | 1,888 | 1 | 1392.7 | 1392.7 | 1393.3 | 0.6 |
| W | 3,053,241 | 151 | 947 | 1.9 | 1393 | 1393 | 1393.6 | 0.6 |
| X | 3,053,814 | 130 | 914 | 2 | 1393.2 | 1393.2 | 1393.8 | 0.6 |
| Y | 3,054,564 | 131 | 932 | 1.9 | 1393.4 | 1393.4 | 1394 | 0.6 |
| Z | 3,055,396 | 86 | 588 | 3.1 | 1393.7 | 1393.7 | 1394.2 | 0.5 |
| AA | 3,056,142 | 102 | 710 | 2.5 | 1394.2 | 1394.2 | 1394.6 | 0.4 |
| AB | 3,056,964 | 109 | 828 | 2.2 | 1394.7 | 1394.7 | 1395 | 0.3 |
| AC | 3,057,787 | 80 | 469 | 3.8 | 1395.1 | 1395.1 | 1395.4 | 0.3 |
| AD | 3,058,471 | 102 | 683 | 2.6 | 1395.6 | 1395.6 | 1395.8 | 0.2 |
| AE | 3,059,260 | 90 | 729 | 2.5 | 1395.8 | 1395.8 | 1396 | 0.2 |
| AF | 3,060,061 | 87 | 796 | 2.3 | 1396 | 1396 | 1396.2 | 0.2 |
| AG | 3,060,986 | 85 | 716 | 2.5 | 1396.4 | 1396.4 | 1396.6 | 0.2 |
| AH | 3,061,893 | 96 | 737 | 2.4 | 1396.7 | 1396.7 | 1396.9 | 0.2 |
| AI | 3,062,749 | 94 | 792 | 2.3 | 1396.9 | 1396.9 | 1397.1 | 0.2 |
| AJ | 3,063,785 | 126 | 1,136 | 1.6 | 1397.1 | 1397.1 | 1397.3 | 0.2 |
| AK | 3,065,044 | 103 | 1,036 | 1.7 | 1397.3 | 1397.3 | 1397.5 | 0.2 |
| AL | 3,066,277 | 92 | 826 | 2.2 | 1397.6 | 1397.6 | 1397.8 | 0.2 |
| AM | 3,067,017 | 122 | 1,240 | 1.5 | 1397.8 | 1397.8 | 1398 | 0.2 |
| AN | 3,068,364 | 87 | 834 | 2.2 | 1398.1 | 1398.1 | 1398.3 | 0.2 |
| AO | 3,069,528 | 94 | 921 | 2 | 1398.5 | 1398.5 | 1398.7 | 0.2 |
| AP | 3,070,882 | 131 | 1,210 | 1.5 | 1398.7 | 1398.7 | 1398.9 | 0.2 |
| AQ | 3,072,320 | 120 | 1,079 | 1.7 | 1398.9 | 1398.9 | 1399.1 | 0.2 |

[1] Feet above mouth

TABLE 24

**FEDERAL EMERGENCY MANAGEMENT AGENCY**

**STUTSMAN COUNTY, ND AND INCORPORATED AREAS**

**FLOODWAY DATA**

**FLOODING SOURCE: JAMES RIVER**

| LOCATION | | FLOODWAY | | | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION ( ) | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE[1] | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | REGULATORY (FEET NAVD88) | WITHOUT FLOODWAY (FEET NAVD88) | WITH FLOODWAY (FEET NAVD88) | INCREASE |
| AR | 3,073,390 | 113 | 1,063 | 1.7 | 1399.1 | 1399.1 | 1399.3 | 0.2 |
| AS | 3,074,402 | 79 | 784 | 2.3 | 1399.2 | 1399.2 | 1399.4 | 0.2 |
| AT | 3,075,112 | 86 | 524 | 3.4 | 1399.4 | 1399.4 | 1399.6 | 0.2 |

[1] Feet above mouth

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

**STUTSMAN COUNTY, ND AND INCORPORATED AREAS**

**FLOODWAY DATA**

**FLOODING SOURCE: JAMES RIVER**

| LOCATION | | FLOODWAY | | | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION ( ) | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE[1] | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | REGULATORY (FEET NAVD88) | WITHOUT FLOODWAY (FEET NAVD88) | WITH FLOODWAY (FEET NAVD88) | INCREASE |
| A | 54 | 172 | 1,158 | 1.6 | 1393 | 1393 | 1394 | 1 |
| B | 846 | 279 | 958 | 1.9 | 1393.4 | 1393.4 | 1394.3 | 0.9 |
| C | 1,824 | 103 | 506 | 3.6 | 1395.1 | 1395.1 | 1395.3 | 0.2 |
| D | 2,937 | 88 | 453 | 4 | 1396.7 | 1396.7 | 1396.8 | 0.1 |
| E | 3,725 | 81 | 475 | 3.8 | 1397.6 | 1397.6 | 1397.6 | 0 |
| F | 4,614 | 80 | 473 | 3.8 | 1398.5 | 1398.5 | 1398.5 | 0 |
| G | 5,724 | 142 | 836 | 2.2 | 1398.9 | 1398.9 | 1398.9 | 0 |
| H | 6,663 | 78 | 583 | 3.1 | 1399.4 | 1399.4 | 1399.4 | 0 |
| I | 7,702 | 88 | 619 | 2.9 | 1399.9 | 1399.9 | 1399.9 | 0 |
| J | 8,718 | 95 | 698 | 2.6 | 1400.4 | 1400.4 | 1400.4 | 0 |
| K | 9,527 | 89 | 593 | 3 | 1400.8 | 1400.8 | 1400.8 | 0 |
| L | 10,489 | 129 | 695 | 2.6 | 1401.6 | 1401.6 | 1401.6 | 0 |
| M | 11,149 | 110 | 697 | 2.6 | 1402.1 | 1402.1 | 1402.1 | 0 |
| N | 12,364 | 138 | 971 | 1.9 | 1403 | 1403 | 1403 | 0 |
| O | 13,750 | 87 | 865 | 2.1 | 1403.4 | 1403.4 | 1403.4 | 0 |
| P | 15,325 | 40 | 407 | 4.4 | 1404.3 | 1404.3 | 1404.3 | 0 |
| Q | 16,850 | 76 | 784 | 2.3 | 1405.4 | 1405.4 | 1405.4 | 0 |
| R | 17,990 | 139 | 967 | 1.9 | 1405.9 | 1405.9 | 1405.9 | 0 |
| S | 19,150 | 166 | 1,286 | 1.4 | 1406.4 | 1406.4 | 1406.4 | 0 |
| T | 20,485 | 114 | 960 | 1.9 | 1406.8 | 1406.8 | 1406.8 | 0 |
| U | 22,250 | 266 | 1,444 | 1.2 | 1407.5 | 1407.5 | 1407.5 | 0 |

[1] Feet above confluence with the James River

TABLE 24

**FEDERAL EMERGENCY MANAGEMENT AGENCY**

**STUTSMAN COUNTY, ND AND INCORPORATED AREAS**

**FLOODWAY DATA**

**FLOODING SOURCE: PIPESTEM CREEK**

| LOCATION | | FLOODWAY | | | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION ( ) | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE[1] | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | REGULATORY (FEET NAVD88) | WITHOUT FLOODWAY (FEET NAVD88) | WITH FLOODWAY (FEET NAVD88) | INCREASE |
| V | 23,680 | 87 | 620 | 2.9 | 1408.3 | 1408.3 | 1408.3 | 0 |

[1] Feet above confluence with the James River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

**STUTSMAN COUNTY, ND AND INCORPORATED AREAS**

**FLOODWAY DATA**

**FLOODING SOURCE: PIPESTEM CREEK**

### Table 25: Flood Hazard and Non-Encroachment Data for Selected Streams

### [Not Applicable to this FIS Project]

## 6.4 Coastal Flood Hazard Mapping

This section is not applicable to this FIS project.

### Table 26: Summary of Coastal Transect Mapping Considerations

**[Not Applicable to this FIS Project]**

## 6.5 FIRM Revisions

This FIS Report and the FIRM are based on the most up-to-date information available to FEMA at the time of its publication; however, flood hazard conditions change over time. Communities or private parties may request flood map revisions at any time. Certain types of requests require submission of supporting data. FEMA may also initiate a revision. Revisions to FIS projects may take several forms, including Letters of Map Amendment (LOMAs), Letters of Map Revision Based on Fill (LOMR-Fs), Letters of Map Revision (LOMRs) (referred to collectively as Letters of Map Change (LOMCs)), Physical Map Revisions (PMRs), and FEMA-contracted restudies. These types of revisions are further described below. Some of these types of revisions do not result in the republishing of the FIS Report. To assure that any user is aware of all revisions, it is advisable to contact the community repository of flood-hazard data (shown in Table 31, "Map Repositories").

### 6.5.1 Letters of Map Amendment

A LOMA is an official revision by letter to an effective NFIP map. A LOMA results from an administrative process that involves the review of scientific or technical data submitted by the owner or lessee of property who believes the property has incorrectly been included in a designated SFHA. A LOMA amends the currently effective FEMA map and establishes that a specific property is not located in a SFHA. A LOMA cannot be issued for properties located on the PFD (primary frontal dune).

To obtain an application for a LOMA, visit http://www.fema.gov and download the form "MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill." Visit the "Flood Map-Related Fees" section to determine the cost, if any, of applying for a LOMA.

FEMA offers a tutorial on how to apply for a LOMA. The LOMA Tutorial Series can be accessed at http://www.fema.gov/plan/prevent/fhm/ot_lmreq.shtm.

For more information about how to apply for a LOMA, call the FEMA Map Information eXchange, toll free, at 1-877-FEMA MAP (1-877-336-2627).

### 6.5.2 Letters of Map Revision Based on Fill

A LOMR-F is an official revision by letter to an effective NFIP map. A LOMR-F states FEMA's determination concerning whether a structure or parcel has been elevated on fill above the base flood elevation and is, therefore, excluded from the SFHA.

Information about obtaining an application for a LOMR-F can be obtained in the same manner as that for a LOMA, by visiting http://www.fema.gov for the "MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill" or by calling the FEMA Map Information eXchange, toll free, at 1-877-FEMA MAP (1-877-336-2627). Fees for applying for a LOMR-F, if any, are listed in the "Flood Map-Related Fees" section.

A tutorial for LOMR-F is available at http://www.fema.gov/plan/prevent/fhm/ot_lmreq.shtm.

### 6.5.3 Letters of Map Revision

A LOMR is an official revision to the currently effective FEMA map. It is used to change flood zones, floodplain and floodway delineations, flood elevations and planimetric features. All requests for LOMRs should be made to FEMA through the chief executive officer of the community, since it is the community that must adopt any changes and revisions to the map. If the request for a LOMR is not submitted through the chief executive officer of the community, evidence must be submitted that the community has been notified of the request.

To obtain an application for a LOMR, visit http://www.fema.gov and download the form "MT-2 Application Forms and Instructions for Conditional Letters of Map Revision and Letters of Map Revision." Visit the "Flood Map-Related Fees" section to determine the cost of applying for a LOMR. For more information about how to apply for a LOMR, call the FEMA Map Information eXchange, toll free, at 1-877-FEMA MAP (1-877-336-2627) to speak to a Map Specialist.

Previously issued mappable LOMCs (including LOMRs) that have been incorporated into the Stutsman County FIRM are listed in Table 27.

**Table 27: Incorporated Letters of Map Change**

**[Not Applicable to this FIS Project]**

### 6.5.4 Physical Map Revisions

PMRs are an official republication of a community's NFIP map to effect changes to base flood elevations, floodplain boundary delineations, regulatory floodways and planimetric features. These changes typically occur as a result of structural works or improvements, annexations resulting in additional flood hazard areas or correction to base flood elevations or SFHAs.

The community's chief executive officer must submit scientific and technical data to FEMA to support the request for a PMR. The data will be analyzed and the map will be revised if warranted. The community is provided with copies of the revised information and is afforded a review period. When the base flood elevations are changed, a 90-day appeal period is provided. A 6-month adoption period for formal approval of the revised map(s) is also provided.

For more information about the PMR process, please visit http://www.fema.gov and visit the "Flood Map Revision Processes" section.

### 6.5.5 Contracted Restudies

The NFIP provides for a periodic review and restudy of flood hazards within a given community. FEMA accomplishes this through a national watershed-based mapping needs assessment strategy, known as the Coordinated Needs Management Strategy (CNMS). The CNMS is used by FEMA to assign priorities and allocate funding for new flood hazard analyses used to update the FIS Report and FIRM. The goal of CNMS is to define the validity of the engineering study data within a

mapped inventory. The CNMS is used to track the assessment process, document engineering gaps and their resolution, and aid in prioritization for using flood risk as a key factor for areas identified for flood map updates. Visit www.fema.gov to learn more about the CNMS or contact the FEMA Regional Office listed in Section 8 of this FIS Report.

### 6.5.6 Community Map History

The current FIRM presents flooding information for the entire geographic area of Stutsman County. Previously, separate FIRMs, Flood Hazard Boundary Maps (FHBMs) and/or Flood Boundary and Floodway Maps (FBFMs) may have been prepared for the incorporated communities and the unincorporated areas in the county that had identified SFHAs. Current and historical data relating to the maps prepared for the project area are presented in Table 28, "Community Map History." A description of each of the column headings and the source of the date is also listed below.

- *Community Name* includes communities falling within the geographic area shown on the FIRM, including those that fall on the boundary line, nonparticipating communities, and communities with maps that have been rescinded. Communities with No Special Flood Hazards are indicated by a footnote. If all maps (FHBM, FBFM, and FIRM) were rescinded for a community, it is not listed in this table unless SFHAs have been identified in this community.

- *Initial Identification Date (First NFIP Map Published)* is the date of the first NFIP map that identified flood hazards in the community. If the FHBM has been converted to a FIRM, the initial FHBM date is shown. If the community has never been mapped, the upcoming effective date or "pending" (for Preliminary FIS Reports) is shown. If the community is listed in Table 28 but not identified on the map, the community is treated as if it were unmapped.

- *Initial FHBM Effective Date* is the effective date of the first Flood Hazard Boundary Map (FHBM). This date may be the same date as the Initial NFIP Map Date.

- *FHBM Revision Date(s)* is the date(s) that the FHBM was revised, if applicable.

- *Initial FIRM Effective Date* is the date of the first effective FIRM for the community. This is the first effective date that is shown on the FIRM panel.

- *FIRM Revision Date(s)* is the date(s) the FIRM was revised, if applicable. This is the revised date that is shown on the FIRM panel, if applicable. As countywide studies are completed or revised, each community listed should have its FIRM dates updated accordingly to reflect the date of the countywide study. Once the FIRMs exist in countywide format, as Physical Map Revisions (PMR) of FIRM panels within the county are completed, the FIRM Revision Dates in the table for each community affected by the PMR are updated with the date of the PMR, even if the PMR did not revise all the panels within that community.

The initial effective date for the Stutsman County FIRMs in countywide format was 5/24/11.

**Table 28: Community Map History**

| Community Name | Initial Identification Date (First NFIP Map Published) | Initial FHBM Effective Date | FHBM Revision Date(s) | Initial FIRM Effective Date | FIRM Revision Date(s) |
|---|---|---|---|---|---|
| CITY OF BUCHANAN[1] | DFIRM Date | N/A | N/A | 5/24/11 | DFIRM Date |
| CITY OF CLEVELAND[1] | DFIRM Date | N/A | N/A | 5/24/11 | DFIRM Date |
| CORINNE TOWNSHIP[1] | DFIRM Date | N/A | N/A | 5/24/11 | DFIRM Date |
| CITY OF COURTENAY[1] | DFIRM Date | N/A | N/A | 5/24/11 | DFIRM Date |
| CITY OF JAMESTOWN | 5/26/72 | 5/26/72 | N/A | 12/31/74 | 5/24/11<br>3/21/00<br>2/17/78<br>4/9/76<br>9/5/75<br>DFIRM Date |
| CITY OF KENSAL | 12/20/74 | 12/20/74 | N/A | 11/20/79 | 5/24/11<br>DFIRM Date |
| CITY OF MEDINA[1] | 12/20/74 | 12/20/74 | N/A | 5/24/11 | DFIRM Date |
| CITY OF MONTPELIER[1] | 11/15/74 | 11/15/74 | N/A | 5/24/11 | DFIRM Date |
| NOGOSEK TOWNSHIP[1] | DFIRM Date | N/A | N/A | 5/24/11 | DFIRM Date |
| CITY OF PINGREE[1] | DFIRM Date | N/A | N/A | 5/24/11 | DFIRM Date |
| CITY OF SPIRITWOOD LAKE | 3/20/79 | 3/20/79 | N/A | 9/30/82 | 5/24/11<br>DFIRM Date |
| CITY OF STREETER[1] | DFIRM Date | N/A | N/A | 5/24/11 | DFIRM Date |
| CITY OF WOODWORTH[1] | DFIRM Date | N/A | N/A | 5/24/11 | DFIRM Date |
| STUTSMAN COUNTY | DFIRM Date | N/A | N/A | 5/24/11 | DFIRM Date |

[1]No Special Flood Hazard Areas Identified.

## SECTION 7.0 – CONTRACTED STUDIES AND COMMUNITY COORDINATION

### 7.1 Contracted Studies

Table 29 provides a summary of the contracted studies, by flooding source that are included in this FIS Report.

**Table 29: Summary of Contracted Studies Included in this FIS Report**

| Flooding Source | FIS Report Dated | Contractor | Number | Work Completed Date | Affected Communities |
|---|---|---|---|---|---|
| James River | 3/21/00 | USACE | EMW-95-E-4756 | 1997 | City of Jamestown |
| James River | DFIRM Date | Houston Engineering | EMD-2012-GR-1273 | April, 2014 | Stutsman County |
| Pipestem Creek | 3/21/00 | USACE | EMW-95-E-4756 | 1997 | City of Jamestown |
| Pipestem Creek | DFIRM Date | Houston Engineering | EMD-2012-GR-1273 | April, 2014 | Stutsman County |
| Spiritwood Lake | 5/24/11 | Houston Engineering | EMD-2008-GR-0875 | 2009 | Stutsman County |

## 7.2 Community Meetings

The dates of the community meetings held for this FIS project and any previous FIS projects are shown in Table 30. These meetings may have previously been referred to by a variety of names (Community Coordination Officer [CCO], Scoping, Discovery, etc.), but all meetings represent opportunities for FEMA, community officials, study contractors, and other invited guests to discuss the planning for and results of the project.

**Table 30: Community Meetings**

| Community | FIS Report Dated | Date of Meeting | Meeting Type | Attended By |
|---|---|---|---|---|
| City of Jamestown | 3/21/2000 | 7/28/1997 | Intermediate CCO | FEMA, USACE, City of Jamestown, State of North Dakota |
| | | 5/6/1999 | Final CCO | City of Jamestown, FEMA |
| | 5/24/2011 | 3/18/2008 | Initial CCO | FEMA, RMC, SWC, Houston Engineering, USACE, Stutsman County, Stutsman Co. WRD, City of Jamestown, City of Spiritwood Lake |
| | | 12/4/2009 | Final CCO | Stutsman County, City of Jamestown, City of Spiritwood Lake, SWC, FEMA, Houston Engineering |
| City of Spiritwood Lake | 3/30/1982 | 10/1978 | Scoping | FEMA, City of Spiritwood Lake |
| | | 11/18/1981 | Final CCO | FEMA, City of Spiritwood Lake, Study Contractor |
| | 5/24/2011 | 3/18/2008 | Initial CCO | FEMA, RMC, SWC, Houston Engineering, USACE, Stutsman County, Stutsman County WRD, City of Jamestown, City of Spiritwood Lake |
| | | 12/4/2009 | Final CCO | Stutsman County, City of Jamestown, City of Spiritwood Lake, SWC, FEMA, Houston Engineering |
| Stutsman County | 5/24/2011 | 3/18/2008 | Initial CCO | FEMA, RMC, SWC, Houston Engineering, USACE, Stutsman County, Stutsman Co. WRD, City of Jamestown, City of Spiritwood Lake |
| | | 12/4/2009 | Final CCO | Stutsman County, City of Jamestown, City of Spiritwood Lake, SWC, FEMA, Houston Engineering |
| | DFIRM Date | 12/13/2012 | Kickoff | SWC, Houston Engineering, Eddy County EM, Foster County, South Central Dakota Regional Council, Stutsman County EM, City of Jamestown, City of New Rockford, City of Carrington, NDDES |
| | | 6/24/2014 | Study Review | FEMA, SWC, Michael Baker, Houston Engineering, Foster County EM, Wells County WRD, Stutsman County EM, Wells County, City of Jamestown, City of New Rockford |
| | | | Final CCO | |

## SECTION 8.0 – ADDITIONAL INFORMATION

Information concerning the pertinent data used in the preparation of this FIS Report can be obtained by submitting an order with any required payment to the FEMA Engineering Library. For more information on this process, see http://www.fema.gov.

Table 31 is a list of the locations where FIRMs for Stutsman County can be viewed. Please note that the maps at these locations are for reference only and are not for distribution. Also, please note that only the maps for the community listed in the table are available at that particular repository. A user may need to visit another repository to view maps from an adjacent community.

**Table 31: Map Repositories**

| Community | Address | City | State | Zip Code |
|---|---|---|---|---|
| CORINNE TOWNSHIP[1,2] | 9045 9th Street SE | Courtenay | ND | 58426 |
| CITY OF JAMESTOWN | 102 3rd Ave SE | Jamestown | ND | 58401 |
| CITY OF KENSAL | 404 Main | Kensal | ND | 58455 |
| NOGOSEK TOWNSHIP[1,2] | 8511 7th Street SE | Kensal | ND | 58455 |
| CITY OF SPIRITWOOD LAKE | 603 E. Lake City Rd | Jamestown | ND | 58401 |
| STUTSMAN COUNTY | 511 2nd Ave SE | Jamestown | ND | 58401 |

[1]Not Flood Prone
[2]No Special Flood Hazard Area

The National Flood Hazard Layer (NFHL) dataset is a compilation of effective FIRM databases and LOMCs. Together they create a GIS data layer for a State or Territory. The NFHL is updated as studies become effective and extracts are made available to the public monthly. NFHL data can be viewed or ordered from the website shown in Table 32.

Table 32 contains useful contact information regarding the FIS Report, the FIRM, and other relevant flood hazard and GIS data. In addition, information about the state NFIP Coordinator and GIS Coordinator is shown in this table. At the request of FEMA, each Governor has designated an agency of State or territorial government to coordinate that State's or territory's NFIP activities. These agencies often assist communities in developing and adopting necessary floodplain management measures. State GIS Coordinators are knowledgeable about the availability and location of state and local GIS data in their state.

**Table 32: Additional Information**

| FEMA and the NFIP | |
|---|---|
| FEMA and FEMA Engineering Library website | http://www.fema.gov |
| NFIP website | http://www.fema.gov/business/nfip |
| NFHL Dataset | http://msc.fema.gov |
| FEMA Region IV | 3003 Chamblee Tucker Road<br>Atlanta, GA 30341<br>(770) 220-5515 |
| **Other Federal Agencies** | |
| USGS website | http://www.usgs.gov |
| Hydraulic Engineering Center website | http://www.hec.usace.army.mil |
| **State Agencies and Organizations** | |
| State NFIP Coordinator | State National Floodplain Insurance Program (NFIP) Coordinator<br>Ken Meredith<br>ADECA/OWR/NFIP<br>P.O. Box 5690<br>Montgomery, AL 36103-5690<br>(334) 353-0853<br>ken.meredith@adeca.alabama.gov |
| State GIS Coordinator | State GIS Coordinator<br>Nick Tew, State Geologist<br>State of Alabama Geological Survey<br>P.O. Box 869999<br>420 Hackberry Lane<br>Tuscaloosa, Alabama 35486-6999<br>(205) 247-3679<br>ntew@gsa.state.al.us |

## SECTION 9.0 – BIBLIOGRAPHY AND REFERENCES

Table 33 includes sources used in the preparation of and cited in this FIS Report as well as additional studies that have been conducted in the study area.

**Table 33 Bibliography and References**

| Citation in this FIS | Publisher/ Issuer | *Publication Title,* "Article," Volume, Number, etc. | Author/Editor | Place of Publication | Publication Date/ Date of Issuance | Link |
|---|---|---|---|---|---|---|
| | Houston Engineering, Inc. | *James River Approximate Study* | Houston Engineering, Inc. | Fargo, ND | May 2014 | |
| | US Department of Agriculture | *Soil Survey of James County, North Dakota* | Soil Conservation Service | | 2006 | |
| | US Geological Survey | *Techniques for Estimating Peak-Flow Regression Relations for North Dakota Streams* | USGS | | 1992 | |
| | US Army Corps of Engineers | *HEC-2 Water-Surface Profiles* | USACE | Davis, CA | 1976 | |
| | US Army Corps of Engineers | *HEC-2 Water-Surface Profiles* | USACE | Davis, CA | 1991 | |
| | US Army Corps of Engineers | *HEC-RAS Water Surface Profiles* | USACE | Davis, CA | 1998 | |
| | FEMA | *Food Insurance Study Guidelines and Specifications for Study Contractors* | FEMA | | 1995 | |
| | Houston Engineering, Inc. | *Hydraulic Report for Upper James River Watershed, ND* | Houston Engineering, Inc. | Fargo, ND | 2014 | |
| | Houston Engineering, Inc. | *Interim Hydrology Report for Upper James River Watershed, ND* | Houston Engineering, Inc. | Fargo, ND | 2013 | |

Table 33 Bibliography and References *(continued)*

| | | | | | | |
|---|---|---|---|---|---|---|
| | US Water Resources Council | *Bulletin 17B, Guidelines for Determining Flood Flow Frequency* | USWRC | | 1981 | |
| | US Department of Agriculture | *Hydrology Manual for North Dakota* | SCS | | 1980 | |
| | US Army Corps of Engineers | *HEC-1 Flood Hydrograph Package* | USACE | Davis, CA | 1991 | |
| | US Department of Commerce, Bureau of Census | *2000 Census of Population and Housing, North Dakota* | | | 2000 | |
| | US Army Corps of Engineers | *Computer Program HEC-HMS Version 3.2* | USACE | | | |
| | US Department of Housing and Urban Development, Federal Insurance Administration | *Flood Insurance Study, City of Jamestown, Stutsman County, North Dakota* | | | February 1978 | |
| | US Army Corps of Engineers, Omaha District | *Jamestown, North Dakota, Flood Insurance Study, Hydrologic Analysis Report* | USACE | | January 24,1997 | |
| | US Army Corps of Engineers | *HEC-1 Flood Hydrographs Package, Generalized Computer Program* | USACE | Davis, CA | February 1991 | |
| | US Army Corps of Engineers | *HEC-2 Water Surface Profiles, Generalized Computer Program* | USACE | Davis, CA | May 1973 | |

Table 33 Bibliography and References *(continued)*

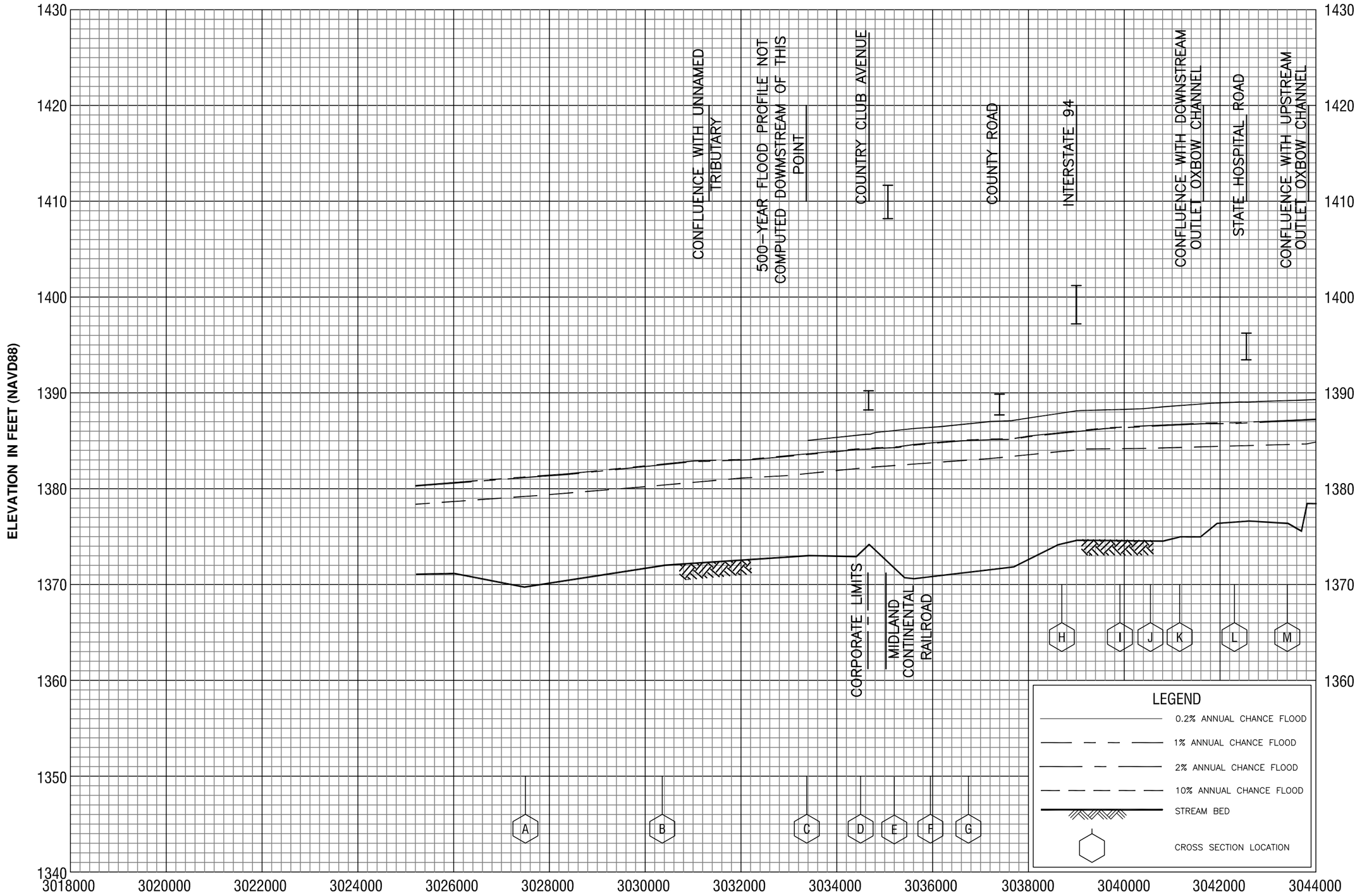
| | | | | | | |
|---|---|---|---|---|---|---|
| | US Department of Agriculture Soil Conservation Service | *Report on Spiritwood Lake Project* | USDA | Bismarck, ND | January 1981 | |
| | ND Geological Survey, Bulletin 41 | *Geology and Ground Water Resources, Stutsman County, North Dakota* | NDGS | | 1963 | |
| | ND State Water Commission | *Office Memo, Subject: Spiritwood Lake – Preliminary Design, Hydrology and Cost Estimates for Four Alternatives to Lower Spiritwood Lake, SWC Project No. 461* | NDSWC | | November 2, 1976 | |
| | Houston Engineering, Inc. | *Interim Report Hydrology and Hydraulics, Flood Insurance Study, Spiritwood Lake City, North Dakota* | Houston Engineering, Inc. | | April 1981 | |
| | US Department of Agriculture Soil Conservation Service | *National Engineering Handbook* | USDA | | August 1972 | |
| | US Department of Housing and Urban Development, Federal Insurance Administration | *Flood Hazard Boundary Map, City of Spiritwood Lake City, North Dakota Scale 1:4800* | US Department of Housing and Urban Development | | March 20, 1979 | |

Table 33 Bibliography and References *(continued)*

| | | | | | | |
|---|---|---|---|---|---|---|
| | Federal Emergency Management Agency | *Flood Insurance Study, City of Spiritwood Lake City, North Dakota* | FEMA | | March 30, 1982 | |
| | FEMA | *Flood Insurance Study, City of Jamestown, North Dakota* | FEMA | | March 21, 2000 | |
| | Houston Engineering, Inc. | *Interim Hydrology Report for Spiritwood Lake* | Houston Engineering, Inc. | | February 15, 2009 | |
| | XP Software | *XPSWMM Computer Program, Version 2008* | XP Software | | 2008 | |
| | US Army Corps of Engineers Hydrologic Engineering Center | *Computer Program HEC-RAS, Version 4.0* | USACE | | | |
| | US Army Corps of Engineers, Omaha District | *Topographic Maps*<br>*Scale 1:1,200, Contour Interval 2 feet* | USACE | | 1951 | |
| | Merrick and Company | *Topographic Maps of the City of Jamestown*<br>*Scale 1:1,200, Contour Interval 1 foot, NAD-27, NGVD-29, North Dakota State Plane Coordinate System, South Zone* | Merrick and Company | | March 1996 | |

Table 33 Bibliography and References *(continued)*

| | | | | | | |
|---|---|---|---|---|---|---|
| | Fugro Horizons, Inc. | *Spiritwood Lake Mapping Project*<br>*Scale 1:600, Contour Interval 2 feet, NAD-83, NAVD 88, North Dakota State Plane Coordinate System, South Zone* | Fugro Horizons, Inc. | | October 2008 | |




# FLOOD PROFILES

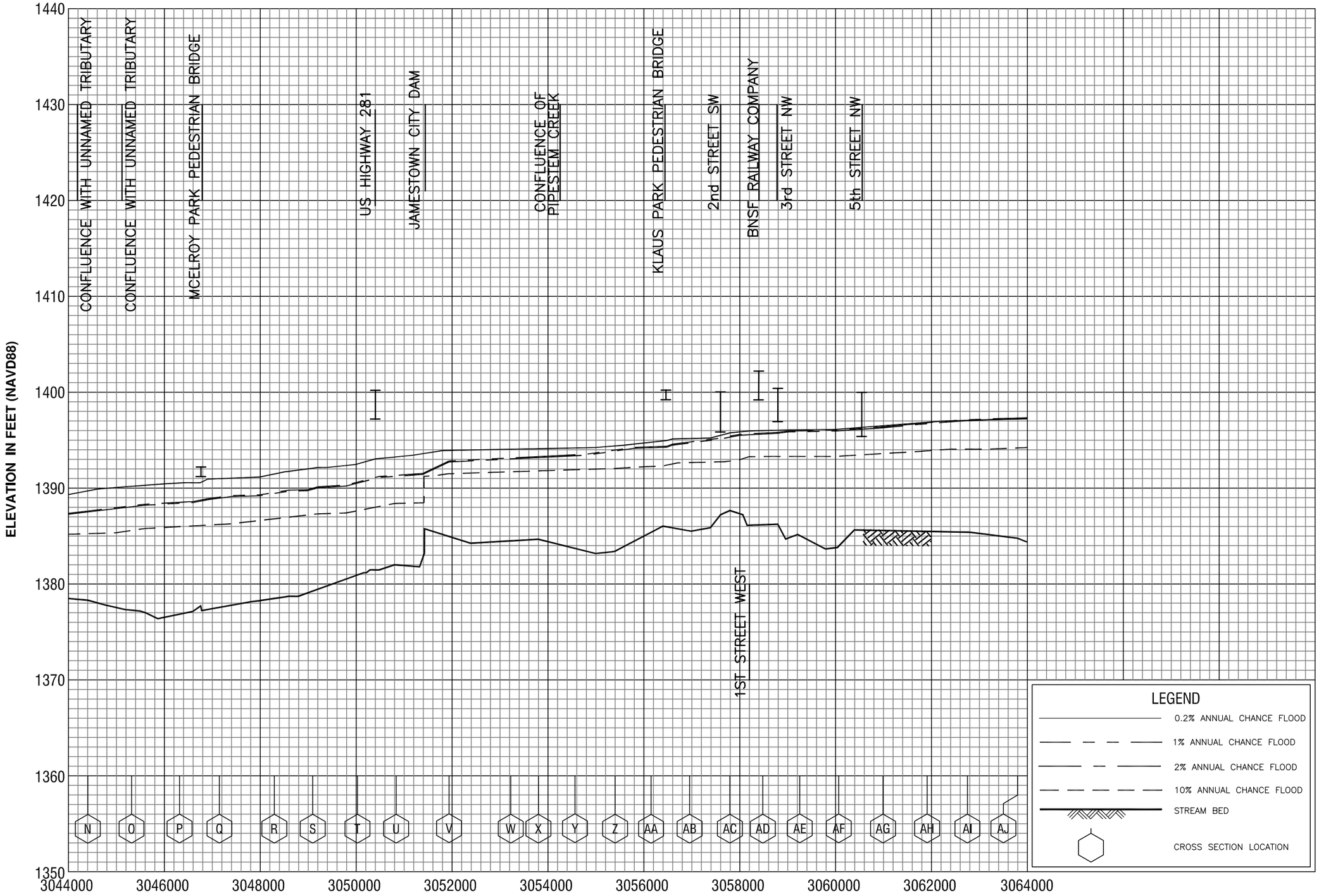
## JAMES RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

STUTSMAN COUNTY, ND

AND INCORPORATED AREAS

01P



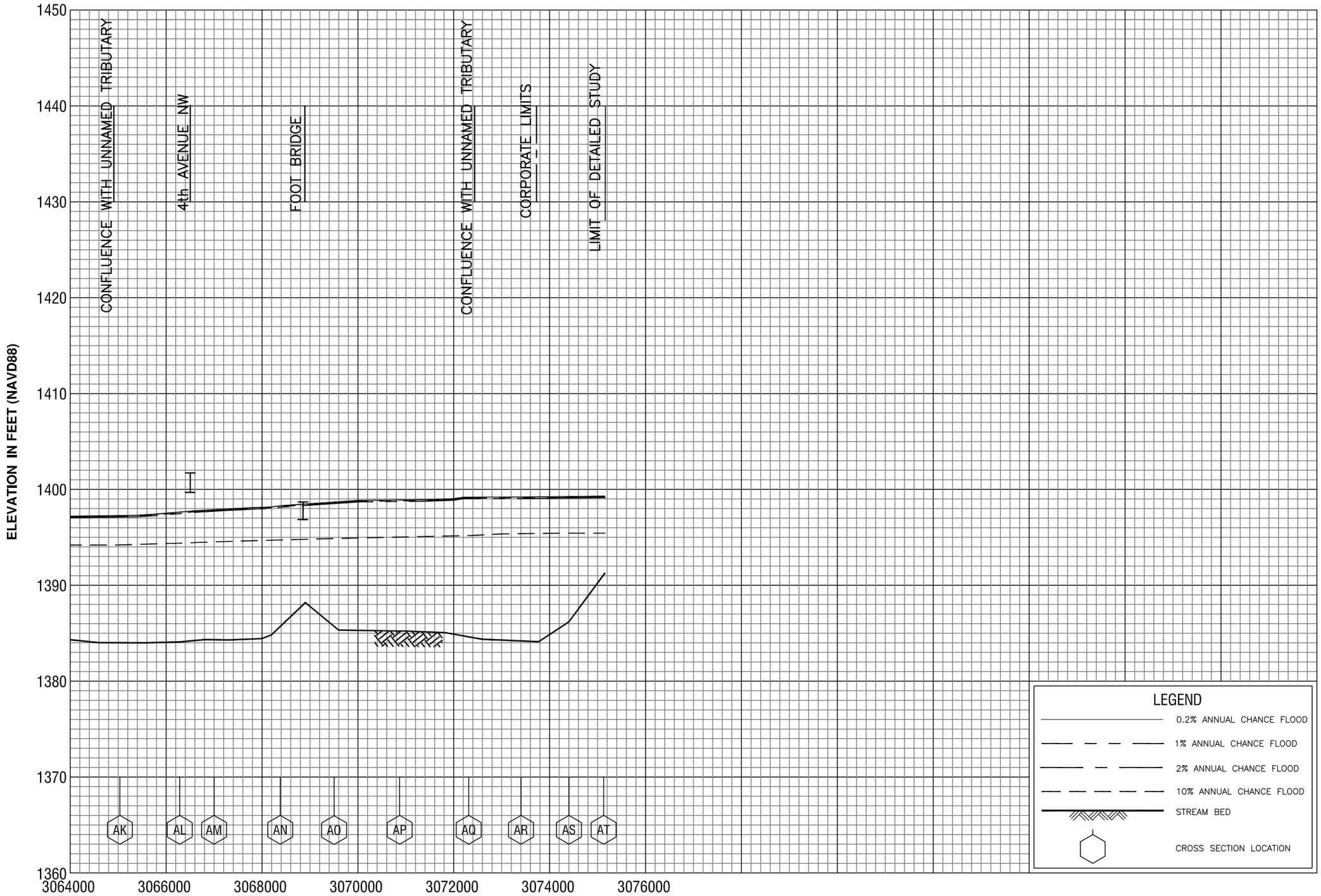

# FLOOD PROFILES

## JAMES RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

**STUTSMAN COUNTY, ND**
**AND INCORPORATED AREAS**

02P



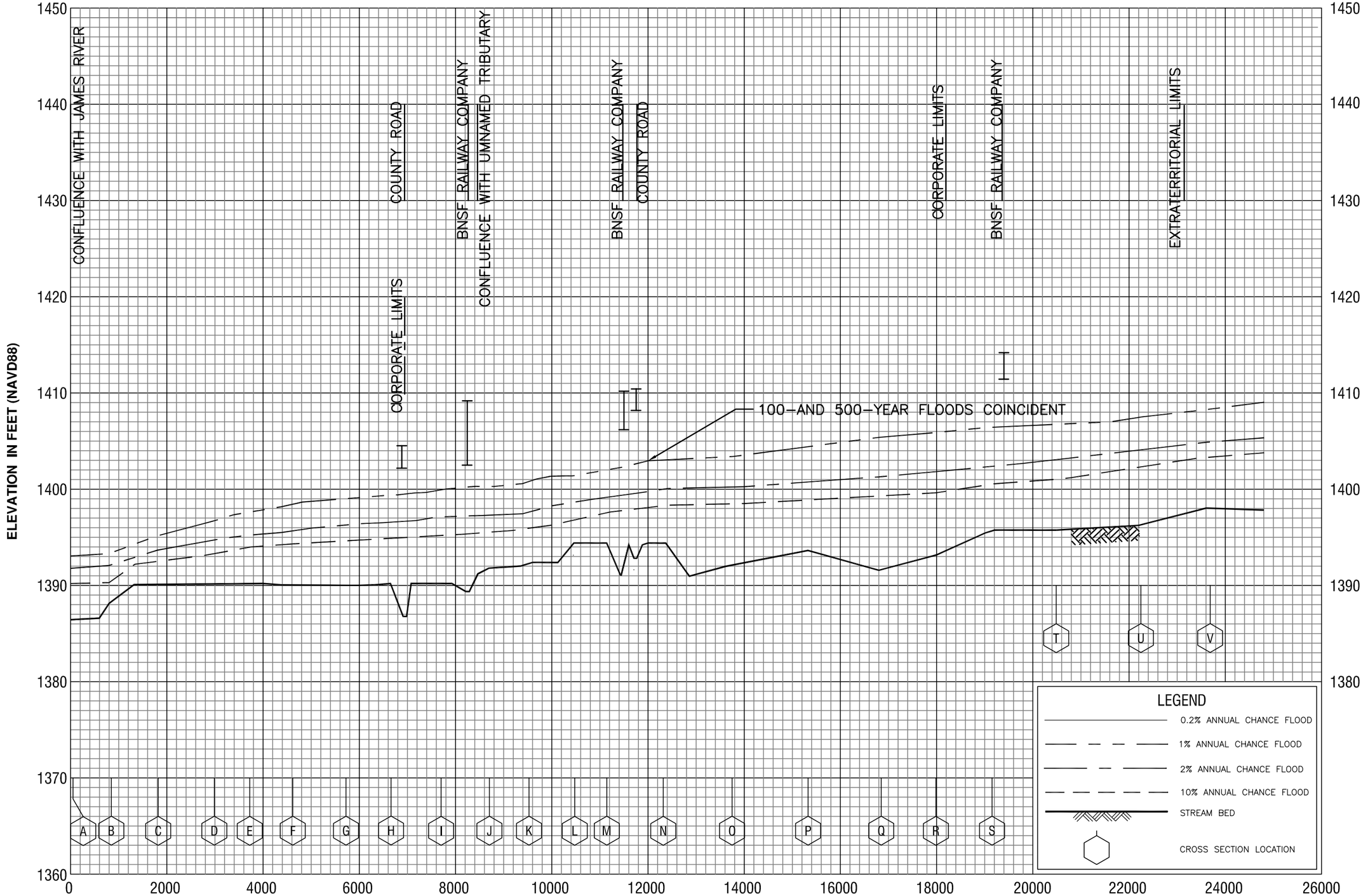

# FLOOD PROFILES

## JAMES RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

STUTSMAN COUNTY, ND

AND INCORPORATED AREAS




# FLOOD PROFILES

## PIPESTEM CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

STUTSMAN COUNTY, ND

AND INCORPORATED AREAS

04P